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Monitor Your Data Center Temperature, Humidity & More

Look For These Features & Functions When Purchasing An Environmental Monitoring Device

Every organization has unique infrastructure limitations, climate issues, and monitoring needs, so there's no one-size-fits-all environmental monitoring solution. Here's what to look for.

✔ Define Your Needs & Threats

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says you need to know what types of threats might occur. "The most common environmental risk is excessive heat within the cabinets, so you'll definitely want to make sure you are monitoring temperature." Other potential environmental dangers include power surges/loss of power, humidity, smoke, airflow, and room/cabinet entry.

"Know thy facility," says Michael Sigourney, senior product specialist at AVTECH (888/220-6700; www.avtech.com). "The first thing an IT or facilities manager needs to consider and create is an understanding of the basic layout and elements, both structure and equipment, within their facility. Knowing where threats are likely to occur or have occurred in the past is key to planning success."

Water and leak detection can be easy to neglect. Chris Pullen, president of RLE Technologies (800/518-1519; www.rletech.com), says that, while power failure is the No. 1 cause of downtime, water is the second and can often be the overall cause of a power failure. He says you need to install leak detection throughout your facility. "Don't forget to look above the ceiling. What's on the floors above your data center? Look outside the box."

✔ Understand The Options

With so many choices, it's tough to know where to start. Harry Schechter, founder and CEO of Temperature@lert (866/524-3540; www.temperaturealert.com), says ease of use and reliability are the two most important features to look for. "Choose a product that provides just the features you need, and this will ensure you're getting something that will be intuitive to set up," he says.

When it comes to connecting monitoring equipment to the network so that it can send alerts, several options exist, Schechter says. USB, Wi-Fi, and Ethernet remain popular, but there are also newer infrastructure-independent devices based on cellular phone connections.

✔ Install & Monitor

An environmental monitoring system is nothing without notifications. "The primary motivation for adding an environmental monitoring system is to know when you have a problem as soon as possible," says Bob Douglass, vice president of sales and marketing at Sensaphone (877/373-2700; www.sensaphone.com). Common notification options include email, LEDs, audible alarms, beacons, sirens, Web alerts, SNMP, automated phone calls, and SMS.

To avoid false alarms, let the monitor run for a few hours after installation so you can see the natural cycle of temperature and other sensors, Schechter says. Once you have a chance to review what a "normal" reading looks like, you can set an appropriate high/low threshold.

✔ Ensure Ample Coverage

Consider the room size and amount of equipment to be monitored and plan the number and placement of sensors accordingly. "If your deployment is small, a few points of measurement may suffice, but if you have a large operation, you may require environmental measurements every few feet," says Brandon Siri, senior marketing representative at Server Technology (800/835-1515; www.servertech.com).

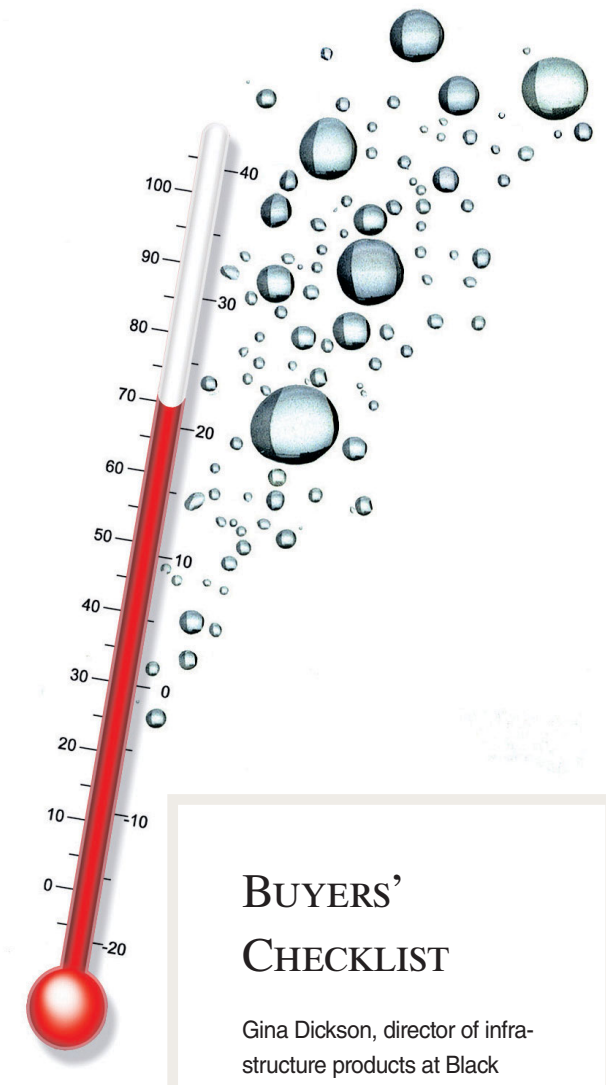
✔ Get All You Need

Be sure you get all the components to complete the system, Viars says. "Most systems have a main console, and in addition to that, you'll need to purchase various sensors based on what you are looking to monitor specifically." Some sensors might require a power source, so consider that when planning your layout.

Sigourney adds that the best solutions include software. "This prevents wasted time trying to get hardware and software from two vendors working together."

✔ Consider Long-Term Support

Choosing the right solution means little if you don't have long-term support, Sigourney says. "Look beyond the checklist and make sure that you're getting future enhancements, that you have access to support, and that the company stands behind its products." P



Key Terms

dry contact
Refers to an electrical contact that has no internally available voltage.

gateway
Receives information from sensors and can provide alarm/alerting functions.

sensors
The wired or wireless devices that measure and report environmental conditions to the gateway.

Buyers' Checklist

Gina Dickson, director of infrastructure products at Black Box (877/877-2269; www.blackbox.com) offers this list of important features to look for:

- ✔ What conditions can be monitored (temperature, humidity, power, etc.)?
- ✔ Are the sensors wireless or wired?
- ✔ What kind of reporting is available from the system?
- ✔ What types of alerts and notifications are available?
- ✔ How easy is it to configure and operate the system?

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1. **What is the size of your company (how many employees)?**
   - ❑ Less than 10
   - ❑ 10 to 99
   - ❑ 100 to 199
   - ❑ 200 to 499
   - ❑ 500 to 999
   - ❑ 1,000+

2. **How often do you purchase computer hardware/software?**
   - ❑ Weekly
   - ❑ Bi-weekly
   - ❑ Monthly
   - ❑ Quarterly
   - ❑ Annually
   - ❑ No Involvement

3. **What is your annual computer hardware/software purchasing budget?**
   - ❑ $0 to $9,999
   - ❑ $10,000 to $24,999
   - ❑ $25,000 to $49,999
   - ❑ $50,000 to $99,999
   - ❑ $100,000 to $249,999
   - ❑ $250,000 to $499,999
   - ❑ $500,000 to $999,000
   - ❑ $1,000,000+

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COMPANY TO WATCH

ServerMonkey Helps Businesses Save Money

Buying Or Selling, Businesses Save By Repurposing Electronics

More companies are discovering they can satisfy their computing technology needs, protect the environment, and save money at the same time by purchasing refurbished equipment. But selecting the right vendor is critical, as companies must ensure the equipment they are buying has been serviced properly and will fill their needs.

ServerMonkey is a Houston, Texas-based technology vendor that is committed to helping companies get a better return on their technology investment. ServerMonkey buys used equipment and then upgrades it to the specifications of new buyers, making sure along the way that each product goes through a full regimen of evaluation and diagnostic procedures. While configure-to-order (CTO) refurbished servers are their specialty, the company also sells a wide range of other types of refurbished tech products and components.

"The number of options that are available for each CTO server system, whether it be a server or workstation, are almost innumerable," says Abram Flansburg, ServerMonkey's supply chain manager. "Customers can order any combination of processor, memory, hard drive, or even small peripheral components like network adapters. If an option is not available on our website, customers can always call us directly to request further customization."

Once the entire system is customized, configured, and put together, ServerMonkey performs a full burn-in test, which can be tailored to a specific industry or use case to make sure the product will perform as expected immediately after implementation. When testing is complete, the company will ship the system in well-secured packaging to prevent damage from occurring during delivery.

ROI For Environment & Your Company

The benefits of buying refurbished equipment go beyond keeping products out of landfills and helping the environment – there's a positive effect on a company's bottom line as well. "Refurbished equipment is a much more affordable option for small businesses, particularly non-profits that tend to have smaller budgets for IT expenditures," says Layla Wright, CEO of ServerMonkey. "The customer gets a product that functions to the same specifications as a brand new unit, but at a much lower price point."

Customers buying refurbished servers get units that are customized to their specifications, and a one-year warranty provides peace of mind. ServerMonkey offers a no-hassle replacement and refund process if a product fails for any reason. Live tech support also is available for customers who need any assistance.

Selling Made Easy

ServerMonkey buys as well as sells used equipment. If you are ready to upgrade and you have equipment you're trying to get rid of, request a Buy Back Quote and you can make money and save landfill space at the same time.

"ServerMonkey wants to partner with companies that care about the full life cycle of the product they produce or use," Wright says. "Finished products should have a robust aftermarket life, so that product is repurposed or recycled with minimum impact on the environment while improving ROI for the original owner and adding value for the secondary owner." P

Company Name: ServerMonkey

Location: Houston, Texas

URL: www.servermonkey.com

Date Company Founded: 2011

Interesting Fact: Server Monkey helps reduce e-waste going to landfills. The EPA estimates only a quarter of consumer electronics products are repurposed or recycled -- the rest are thrown away.

FEATURED PRODUCT

A Storage Solution For Any Need

Barracuda Has You Covered Whether It's Backup, Archiving, Or Simple Copying & Sharing

Today's enterprise storage environments are complex, with different storage needs each demanding a different solution.

You need a backup solution for quick recovery in the event of a disaster, email archiving to ensure emails can be retrieved and reproduced in the event of a discovery process, and a place for employees to be able to easily back up or copy and share documents with others, regardless of their location. Barracuda's range of storage products covers those needs and others.

Barracuda Message Archiver

Barracuda Message Archiver offers a complete, affordable solution for enterprises facing increased restrictions when it comes to legal and regulatory compliance.

The plug-and-play Archiver appliance indexes and stores all sent and received emails in one central, tamper-proof location. In the event of a discovery request from human resources or legal, you can easily find what you need.

In addition to helping comply with PCI DSS, HIPAA, FINRA, and other regulations, the Message Archiver appliance lets you move email storage and user traffic off your primary mail server, so you'll benefit from better overall efficiency in your email servers and storage. Plus, Barracuda Message Archiver deduplicates and compresses email while stubbing attachments an average of 85% before storing the messages.

Archiver offers role-based access for administrators and auditors, along with audit logs that provide clear visibility into search activity. An Exchange add-in lets users access their own archived emails through Outlook.

Administrators can define retention policies to ensure different types of information are kept for the time needed to remain in compliance while freeing up memory by removing messages that are no longer needed.

Barracuda Backup Service

Barracuda Backup Service provides a simpler, more cost-effective way to back up your servers for disaster recovery.

With the server backup service, in the event of an outage, data corruption, or other disaster, you'll have the software, configuration, and data you need to restore your server in record time. A LiveBoot for VMware feature lets you boot a virtual machine directly from the backup server's deduplicated backup storage, so you can get back up and

running even more quickly. And you won't have to rely on removable media such as tapes, which take considerable time and effort not to mention the chance of them being lost, stolen, or damaged.

Barracuda Backup Service includes a plug-and-play appliance with either cloud storage or private cloud disc-based replication to store data in multiple offsite locations. Backups and restores occur at LAN speed, and deduplication and compression features reduce your total backup storage footprint up to 50 times when compared to other traditional backup methods. Your data is secure using AES 256-bit encryption at all times.

Administrators can set policies for backup and retention to help in compliance efforts. A Web-based dashboard offers a quick glance at current backup and system status while making it easy to find and restore files and view backup reports. For organizations with several data center locations, Barracuda Backup provides convenient central management of backups at all locations.

A risk-free 30-day trial is available for both Barracuda Backup and Barracuda Message Archiver.

Copy By Barracuda

With enterprise employees literally working from anywhere across the globe, they need a way to quickly back up or share files or folders. Copy can serve as a "backup for your backup" or as a standalone backup product.

Any file you save with Copy is immediately accessible on whatever device you choose, whether it's a computer, smartphone, or tablet. You can share files and folders publicly or by private invite only and share them as view-only or with the ability to let other users sync and edit them. Perhaps best of all, you can set up a free account at www.copy.com and get up to 15GB of space.

No matter your backup need, whether it's full-scale email archiving or backup for individual users, Barracuda has the product to meet the challenge. P

Barracuda Backup, Message Archiver & Copy

(888) 268-4772

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A set of data storage options including Backup for onsite and remote storage and assured data access, Message Archiver for search and retrieval, and Copy for storing, protecting, and sharing documents from anywhere.

copy

Barracuda

FEATURED PRODUCT

Maintain The Ideal Temperature

Geist Opengate Containment System Uses Sensors, Chimneys & Enclosures To Provide An Intelligent Cooling Solution For Your Data Center

How do you solve cooling problems in your data center? Do you invest in portable cooling? Propose having a contractor install additional CRAC units? Rearrange equipment in an attempt to get by?

"Traditionally, cooling problems get addressed with more CRAC units as a band-aid fix, which results in a situation where the data center is vastly overcooled," says Bryce Kleen, product manager at Geist. "It's like adding a window air-conditioning unit to your new house to keep the temperature cool because it gets hot when you leave all of your doors and windows open." This is very expensive, and you can end up wasting precious money and resources.

An intelligent containment solution, such as the Geist Opengate containment system, is the best option to manage data center cooling and airflow without overcooling.

Maximize Performance

Opengate by Geist is designed to maximize the performance of your cooling system by delivering the hottest return air to the CRAC while only requiring a modest level of cold air at the start, Kleen says.

It does so by providing "intelligent containment," he says. This two-step process

focuses on containing heat in the back of the cabinet and then exhausting it through a chimney directly to a CRAC unit, ensuring data center equipment stays at the ideal temperature. In fact, IT intake air is stabilized within a few degrees of the supply air temperature at all points in the data center.

The Opengate system includes expertly manufactured chimneys and conversion kits that seal cabinets at the rear and sides and work to channel hot air directly to the hot air return and minimize hot air mixing.

But unlike simple passive chimney systems, Geist's Opengate incorporates smart fans to regulate the internal pressure of the cabinet, Kleen says. The fans speed up or slow down based on the information they receive from pressure and temperature sensors both inside and outside the cabinet.

"It's a process that successfully quarantines all IT exhaust, so data centers can optimize their cooling supply air temperature," he says. "In fact, by containing the hot air and keeping it from mixing with the cold air, data centers can save up to 40% on cooling energy."

Works With Your Existing Setup

Opengate can work with virtually any type of cabinet setup, whether it's a single cabinet or row of cabinets, cabinets that are partially full or ones that have very high densities.

With Geist's vast library of cabinet-specific installation kits, including cabinet tops, door-blocking kits, and mounting hardware, Opengate is available for virtually every new or existing cabinet model or configuration. And Geist design engineers can deliver a custom solution, if needed, ensuring Opengate can be retrofitted to work in any existing data center, Kleen says, regardless of size or the cold air process currently in use.

The Opengate system's capacity automatically scales as loads are added or removed. High-density loads can be combined, and multiple systems can work together to share cabinet loads. If there's a power failure, the Geist cooling unit can continue to operate using power provided by its PDU.

The software included with Opengate automatically monitors and reports environmental conditions, and you can receive automatic email or SNMP notifications of system threshold breaches. The Opengate system provides a real-time airflow consumption measurement at the rack level. Coupled with Geist's Environet DCIM solution, data centers now have a means to accurately sequence CRAC units or scale back cooling horsepower to match the ever-changing heat loads of today's dynamic data centers. P

Opengate by Geist

(800) 432-3219
www.geistglobal.com

An active containment system that focuses on containing heat and expelling heat directly to CRAC units, maintaining the ideal temperature for your data center, regardless of its size or density.

GEIST

FEATURED PRODUCT

Comprehensive Traffic Visibility Into Your 40Gb Network

Niagara 4330-8X Is An Industry First From Industry Leader Interface Masters

Combine the highest port density 40Gb, non-blocking load balancing system on the market today and up to 2.56 TBps of throughput. Add in a plug-and-play, drag-and-drop GUI for packet filtering, mirroring, slicing, session-based traffic distribution, and traffic aggregation. Then put it all together in a 1U system. What you have is the new Niagara 4330-8X PacketMaster system from Interface Masters Technologies.

Niagara 4330-8X is an industry-first from a company that is quickly becoming known for forward-thinking and innovation in the network monitoring and high-speed networking markets.

"Interface Masters is taking the lead in the monitoring market, stepping beyond the conventional density, features, and quality typically seen on the market today," says Aaron Nankin, Senior Sales and Marketing Manager. "As a leading pioneer of PacketMaster technology, we are proud to be releasing bleeding edge product offerings for the monitoring market."

A Hybrid Approach

Enterprises, data centers, universities, telcos, cable operators and others that have built 40Gb networks often still require at least a couple of 10Gb or 1Gb connections, Nankin says. With thirty 40Gb ports, the Niagara 4330-8X offers an affordable path to 40Gb network management, while the additional eight 10Gb ports ensure you can still utilize your 10Gb or even 1Gb monitoring tools such as intrusion prevention and detection, data loss prevention, and WAN acceleration systems.

"The fact that we have thirty 40Gb ports in a 1U rackmount device is historic," Nankin says. "In addition to port density advantages, Niagara 4330-8X has an unmatched cost per-port, and offers much greater value then what is available on the market."

The 4330-8X's PacketMaster capabilities provide advanced traffic management options for packet filtering, packet mirroring, packet slicing, session-based traffic distribution, and traffic aggregation.

With the 4330-8X, up to four legacy 10Gb or 1Gb appliances can be used to monitor 40Gb links. When traffic comes into the system, the 4330-8X load balances traffic to the 10Gb or 1Gb appliances and then re-aggregates the traffic once ready to be sent back to the 40Gb network. The system can handle L2-L4 packets, IPv6 and IPv4 traffic, and MPLS packets.

Dual redundant hot-swappable power supplies and reversible fans ensure the system will stay up and running, while support for both AC and DC power supplies ensures the PacketMaster system is telco-grade.

Advanced Management GUI

In addition to the fast throughput and 40G port density, the Niagara 4330-8X really stands apart in its use of a plug-and-play, drag-and-drop GUI for network monitoring configuration and set up.

Using the interface, network administrators can easily drag and drop ports to define input and output while selecting from a list of "filters" which will dictate how traffic will flow in terms in terms of filtering, load balancing, traffic aggregation, or other PacketMaster functions. As long as the ports are populated with the appropriate SFP or QSFP modules and cables, once the input, output and filter are defined, the Niagara 4330-8X will automatically configure the ports and start routing traffic based on the selected configuration mapping(s).

"40Gb networks are coming on strong as data centers and enterprises exceed their 10G thresholds and look for ways to continue to serve their growing networking needs," Nankin says. "With industry-leading 40G port density, the Niagara 4330-8X will secure and ensure visibility into customer networks that are currently transition to 40G, while future proofing for expansion into high density 40G deployments." P

Interface Masters Niagara 4330-8X

(408) 441-9341 ext. 147
www.interfacemasters.com

Combines 30 40Gb ports and eight 10Gb ports into a 1U system that can support up to 2.56Tbps of throughput. PacketMaster capabilities allow for traffic management, including load balancing, aggregation, mirroring and filtering.

Interface Masters
TECHNOLOGIES
Innovative Network Solutions

CPS, LLC
U-X3 Universal AC Power Switch

Computer Peripheral Solutions, LLC manufactures numerous products that are targeted towards very economical problem resolutions and increasing efficiencies within various niches in today's networking, such as local and remote controlled power devices, remote switching, telephone line sharing and dial security. They can be used in a variety of applications such as kiosks, monitoring equipment, security systems, observatories and lab/test centers, to name a few. Most units offer several different types of control, for example: USB, Wireless, ring count, touch-tone, cell and web. The products range from a single box to the more flexible and scalable modular systems.

The U-X3 (pictured above) is an economical, but extremely flexible AC power control device that can be used to control the AC power to three different devices via Ethernet, USB or Wireless.

The products were developed as a result of specific user requirements, others as OEM products while still others evolved solely on speculation. This has resulted in a rather diverse product line and has also served to expand the company's technology base.

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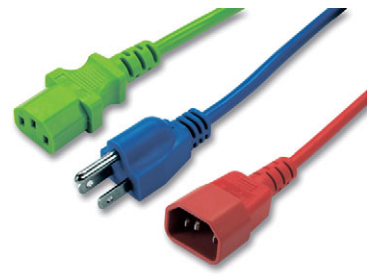

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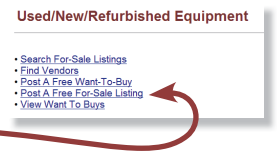

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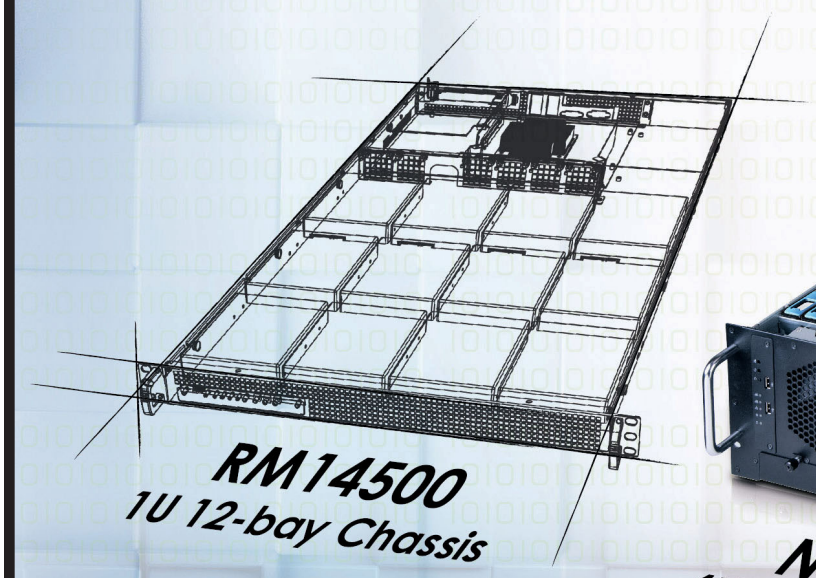

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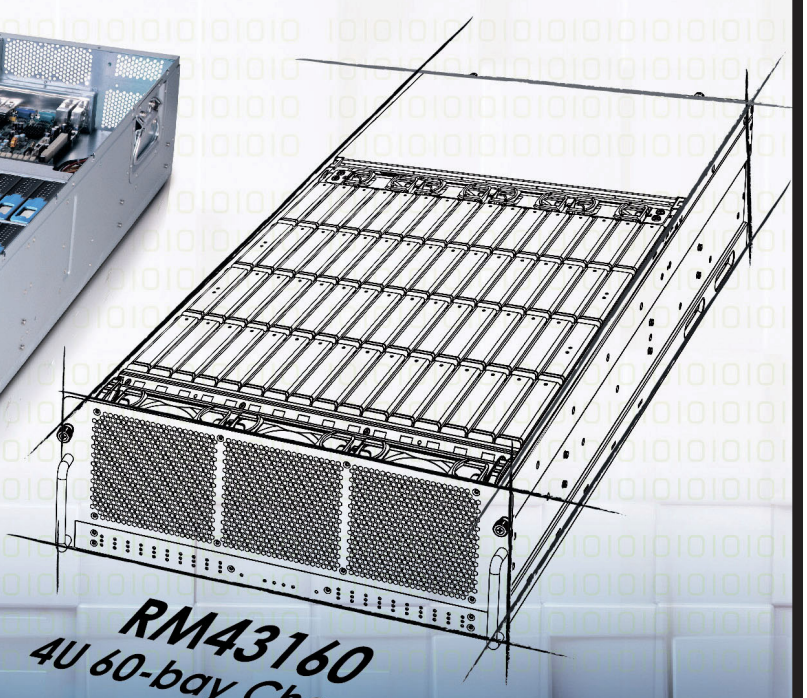

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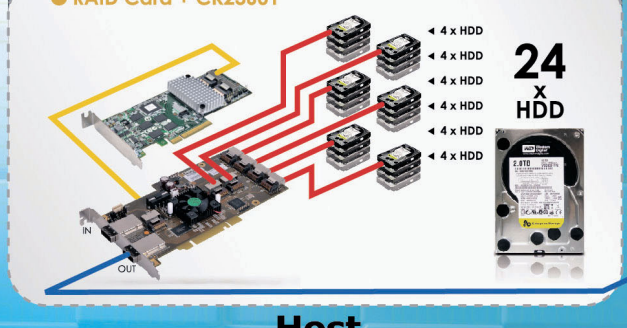

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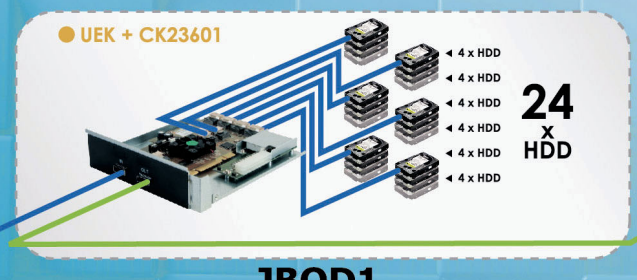

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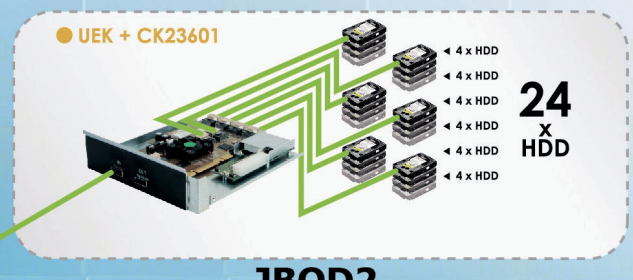

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Siemon Enhances Fiber Product Line

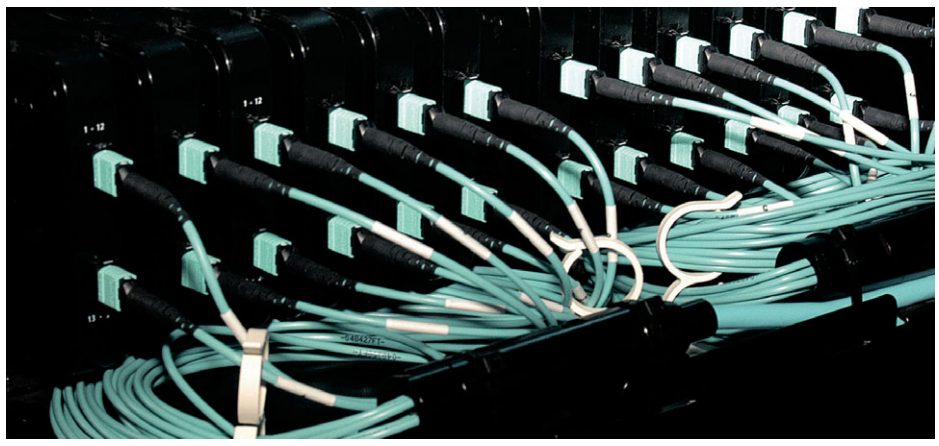
Low Loss Plug & Play Solutions Help Data Center Managers Contend With Fiber Channel Loss Budget & 10, 40 & 100 Gigabit Applications

SIEMON, A LEADING GLOBAL network infrastructure specialist, is pleased to enhance its fiber connectivity offering with low loss versions of its standard loss fiber plug-and-play cable assemblies and modules to help data center managers contend with today's shrinking optical loss budgets and support multiple mated pairs for flexible 10, 40, and 100 Gigabit applications.

Available on Siemon MTP® to MTP reels and extenders, LC to MTP, and SC to MTP plug-and-play modules and LC to MTP trunks using Siemon XGLO® OM3 and OM4 multimode optical fiber, Siemon low loss plug-and-play solutions improve insertion loss to a maximum of 0.20 dB for MTP mated pairs and 0.15 dB for LC or SC mated pairs, well below the industry standard of 0.75 dB per mated pair. Siemon low loss plug-and-play MTP to LC or SC modules now offer a combined loss of 0.35 dB and 0.20 dB for MTP to MTP pass-through adapter plates.

Maintain Manageability & Flexibility Of Fiber Links

"As data center applications migrate from 10 to 40 and 100 Gigabit speeds, loss budgets for fiber channels have become tighter than ever before. At the same time, data center managers are looking for ways to flatten their architecture while maintaining manageability and flexibility of fiber links. This often calls for the use of multiple mated pairs within the channel to support convenient patching areas that enable easier moves, adds, and changes," says Charlie Maynard, Fiber Optic Product Manager at Siemon's global headquarters.



"With optical loss budgets being a top concern in today's data center environments, Siemon low loss plug-and-play fiber solutions can give data center managers the loss headroom they need for complete peace of mind and flexibility when deploying the latest high-speed applications."

Easy Migration To 40Gb, 100Gb

Through the use of manufacturing excellence and elite ferrule technology, combined with the improved optical performance of the MTP connector, Siemon low loss plug-and-play solutions provide an easier migration to 40 and 100 Gigabit applications, flexible patching options over a wide range of distances and infrastructure configurations, and true plug-and-play capability without the limitations of exceeding optical loss budgets.

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Learn more about the Siemon low loss plug-and-play solutions at www.siemon.com/plug-and-play. P

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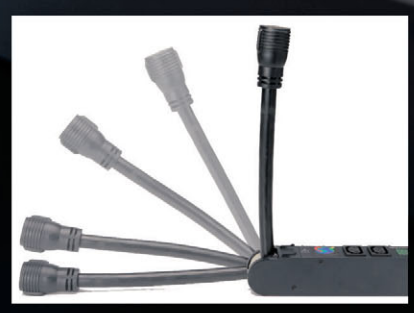

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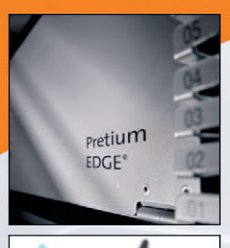

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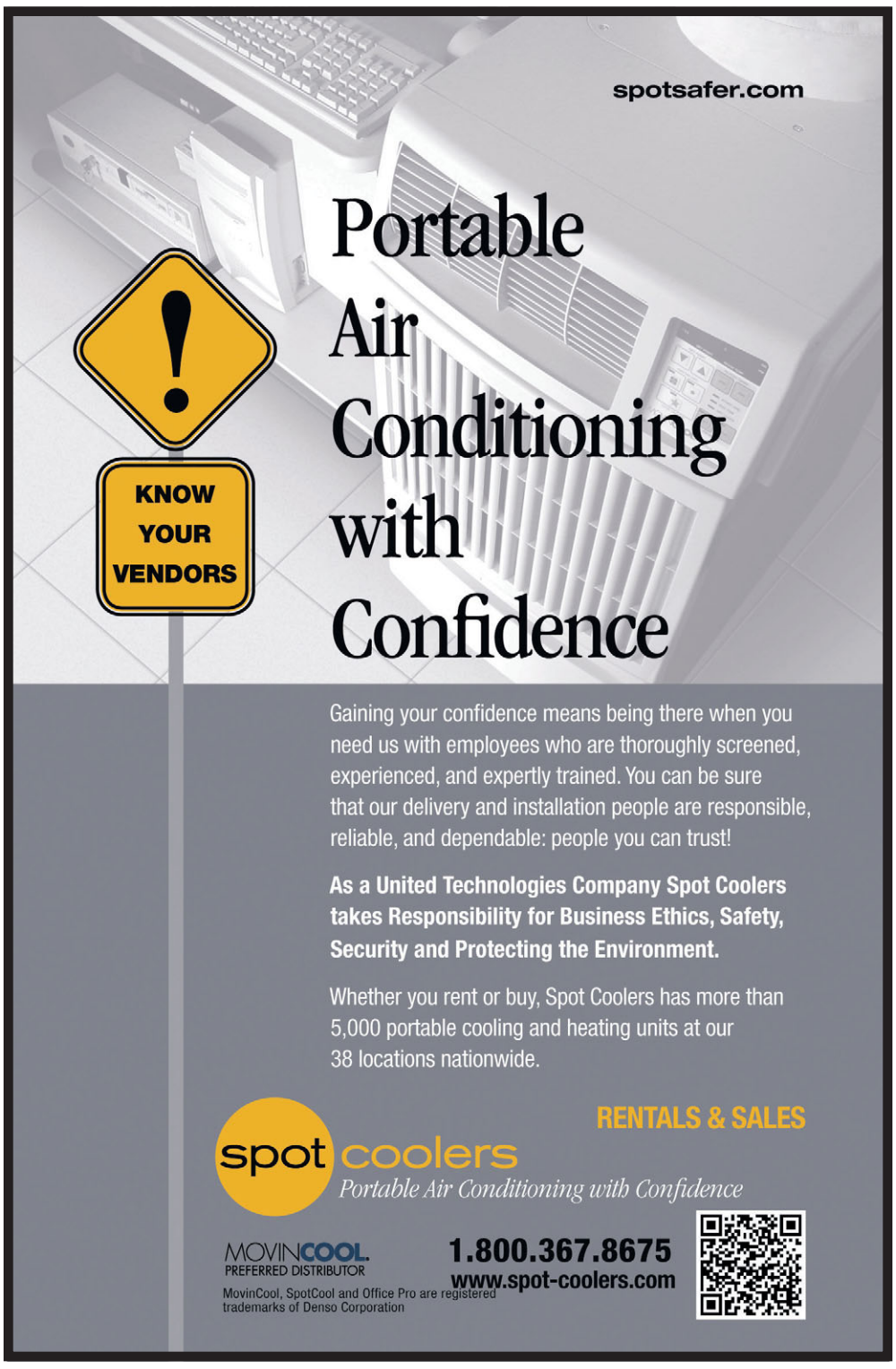
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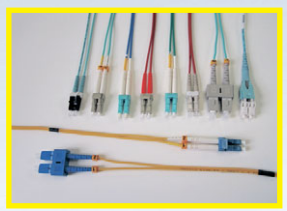

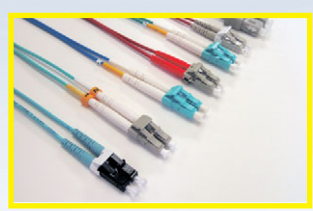
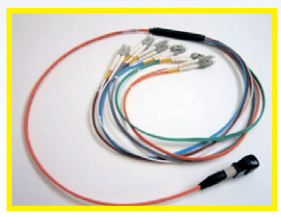

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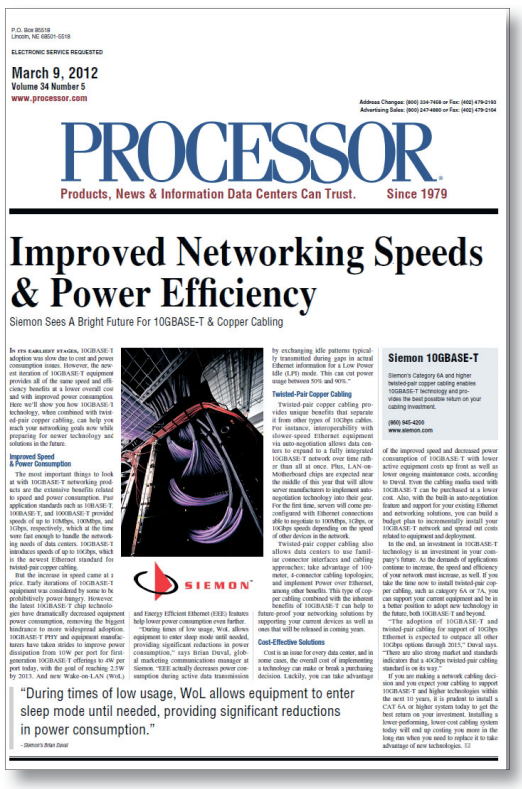
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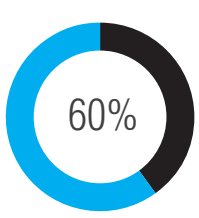
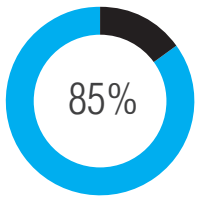
In-Person Meetings Seen As More Effective

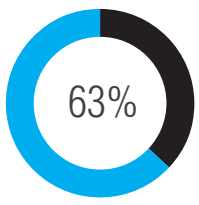
A recent Oxford Economics survey of American executives and business travelers found that these groups favor in-person meetings to electronic or virtual ones, and that in-person meetings are more profitable. According to the Oxford Economics study, businesses enjoy, on average, $12.50 in increased revenue and $3.80 in new profits for every dollar they spend on business travel. Here's a look at some of the survey results:



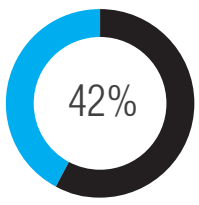
60% of business travelers say, regarding prospective customers, that virtual meetings are less effective than in-person meetings.



85% of executives say, regarding prospective customers, that Web meetings and teleconferences are less effective than in-person meetings.



63% of executives say, regarding existing customers, that virtual meetings are less effective than in-person meetings.



42% of business travelers say they would lose customers without face-to-face meetings.

Gartner Tracks Dramatic Rise In Tablet Sales

Although Gartner expects shipments of "traditional" PCs (a definition that includes both desktops and laptops) to decline by 10.6% this year, the research firm forecasts that tablet shipments will soar by 67.9%, while mobile phone shipments will be up 4.3%. The percentages are dramatic, but the actual number of devices shipped completes the picture. Here are the figures, in thousands, according to Gartner:

Device Type	2012	2013	2014
Traditional PCs	341,273	305,178	289,239
Ultramobiles	9,787	20,301	39,824
Tablets	120,203	201,825	276,178
Mobile Phones	1,746,177	1,821,193	1,901,188
Total	2,217,440	2,348,497	2,506,429

Researchers Promote "Information As Strategy"

Does your business have an information strategy? If it doesn't, you're not alone, according to researchers at Gartner. Less than 10% of enterprises have a true information strategy, Gartner found. "When asked about the new kinds of information they anticipate as being disruptive in the next few years, half of the respondents to Gartner's 2013 Worldwide CEO and Senior Executive Survey could not provide an answer or name a technology," says Partha Iyengar, country manager for Research, India at Gartner. With vast amounts and types of new information being made available, Gartner notes that leaders need to figure out how these new kinds of information will drive value, when it becomes realistic to achieve new things that were not possible before, and how you'll be able to use the new information without it seeming like spying or privacy invasion.

Semiconductor Market Down, But Growth Is Expected

IDC's final 2012 figures on the worldwide semiconductor market show that the market contracted to $295 billion. This contraction was expected as a logical outcome of weakened consumer demand for PCs and other electronics during the last half of 2012. Within the overall market, some categories fared better than others. Sensors and actuators, for example, grew at 11% relative to 2011, while memory declined by 10% year-over-year. However, says Mario Morales, program vice president with IDC, "investment in R&D and capital in the semiconductor industry remains very high and focused on innovation and addressing the competitive dynamics of a diverse set of industries that semiconductors support." IDC expects the market to turn around this year, with growth forecast to increase by 3.5% for the year.

Slowing PC Sales Means Drop In Monitor Sales

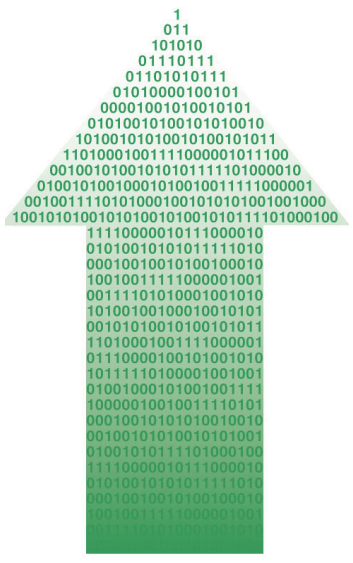
Slower-than-anticipated PC sales have caused research firm IDC to lower its projections of PC monitors shipped for both the first quarter 2013 and full year. IDC says it expects about 33.8 million PC monitors to have shipped during the first quarter, down from its original projection of 34.7 million units. IDC expects 134.4 million units to ship this year, down from its original estimate of 140.1 million units and marking a 9.9% year-over-year decline. Research analyst Jennifer Song says IDC expects the Windows 8 operating system to increase sales of touch-based monitors. She notes that average screen sizes will also increase from 20.4 inches today to 21.4 inches by 2017.

Even Hands-Free Devices Put Drivers At Increased Risk

Hands-free technologies are being marketed as a way to safely use mobile phones and other devices while driving. But that's not necessarily the case, according to a recent study by the AAA Foundation For Traffic Safety. Mental distractions still exist, even when using hands-free devices. According to the study, as a driver's mental workload and distractions increase, reaction time slows and brain function is compromised, and drivers spend less time scanning the road and are more likely to miss visual clues. For the study, Dr. David Strayer and a team of researchers at the University of Utah measured brainwaves, eye movement, and other metrics to see what happens to drivers' mental workloads when they attempt to do multiple things at once. Study findings "reinforce previous research that hands-free is not risk-free," says AAA Foundation President and CEO Peter Kissinger.

Gartner: Keep Personal Data At Arm's Length, But Under Control

By 2019, 90% of organizations will have personal data on IT systems that they don't own or control, according to Gartner. "The time has come to create an exit strategy for the management of personal data. Strategic planning leaders will want to move away from storing and processing personal data in the next five years," says Carsten Casper, research vice president at Gartner. Casper says that just as adhering to PCI DSS caused many enterprises to eliminate credit card data from their own systems and enlist an external service provider, handing over personal data to a specialized "personal data processor" could become the norm. To do this, Gartner notes, companies need to take several steps, including creating clear delineations between personal and non-personal data, locating and protecting personal data, and adhering to privacy standards (or creating your own).



MIT Researchers Offer Possible Cloud Security Solution

Regardless of the security measures in place, using a public cloud provider increases the risk that sensitive data that is stored in the cloud can be exposed. One solution is to encrypt data before storing it in the cloud, but once that happens, under current circumstances the data can't be analyzed. The choice for organizations boils down to either saving unencrypted data to the cloud so that it can be analyzed and mined (a major security risk), or saving encrypted data to the cloud where it can't be analyzed until it is withdrawn from the cloud and decrypted (a significant impediment to deriving value

from the data). One solution, which thus far has existed in concept only, is called homomorphic encryption, whereby encrypted data could be used and analyzed without having to decrypt it first. Massachusetts Institute of Technology's Craig Gentry believes he has made this possible by adding an extra layer of encryption to the process. At this point the additional encryption slows the process, making it impractical for fast-paced business requirements, but Gentry is working on optimizations and envisions a market-ready solution within five to 10 years.

Security Market Strong In 2012 . . .

Security software vendors worldwide had a good year in 2012, according to the latest figures on that category from Gartner. Revenue reached $19.2 billion, a 7.9% increase over 2011, as the "security market saw a continuation of increasing demand for consumer and enterprise security tools," according to Ruggero Contu, research director with Gartner. Contu expects SMBs to continue to consider cloud-based security options and to seek better ways to secure the devices carried by an increasingly mobile workforce. The growing popularity of virtualization solutions among SMBs is also generating more interest in software solutions designed for virtual environments, according to Gartner.

. . . & Is Set To Continue Growth

Following its report of a strong security technology and services market in 2012, Gartner released an optimistic forecast for 2013. The research firm expects the worldwide security market to increase 8.7% in 2013 compared to 2012, with revenue totaling $67.2 billion. Citing security as a top area of IT concern that is likely to continue, Gartner forecast the market to grow to $86 billion in 2016. "To support the growing need for security analytics, changes in information security people, technologies, integration methods, and processes will be required, including security data warehousing and analytics capabilities, and an emerging role for security data analysts within leading-edge enterprise information security organizations," says Eric Ahlm, research director with Gartner.

Chinese Supercomputer Ranks As No. 1

For the first time in nearly three years, China again has a supercomputer ranked No. 1 in the Top500 list of the world's most powerful supercomputers. The Tianhe-2, or Milky Way-2, has a performance of 33.86 petaflops per second, according to the Top500 list, which is released twice a year. The supercomputer has 16,000 nodes and 3,120,000 computing cores and, other than the Intel components used for the main compute portion, uses software, features, and components primarily developed in China. The Tianhe-2 will be in use at the National Supercomputer Center in Guangzhou, China, by the end of this year. The Cray XK7, in use at the U.S. Department of Energy's Oak Ridge National Laboratory, now ranks No. 2 on the list. Sequoia, which is installed at the Lawrence Livermore National Laboratory, ranks No. 3.

Mobile Payments To Increase 44% Over Last Year

The value of all mobile payment transactions worldwide will rise from $163.1 billion (from 200.8 million transactions) in 2012 to $235.4 billion (from 245.2 million transactions) this year, according to the latest research from Gartner. In general, Gartner forecasts 35% growth per year in the mobile payment industry through 2017. By contrast, Near Field Communications, the short-term wireless technology that was expected to spur growth in mobile transactions, has not been adopted as anticipated, prompting Gartner to reduce NFC's value by 40% for part of the forecast period. Most of the value from mobile transactions will come from mobile transfers (71%) and merchandise purchases (21%), according to the research firm.

SIX QUICK TIPS

Dispose Of Old Storage & Media

Protect Your Company Through Proper Data Eradication

Your data center was built to store vast amounts of information, both mundane and highly sensitive. So when your storage devices are in need of an upgrade or a refresh, that data needs to be protected or completely eradicated.

Security issues, industry regulations, and company polices can create obstacles to disposing of your old storage and media. Here's what you need to know to ensure safe, secure destruction or recycling.

✔ Understand The Threats

You may think that simply erasing the data from your company's storage devices before disposing of them is enough. But if there isn't an expert in data removal at your company, you can't be sure your data has been properly removed and protected.

A majority of devices in your data center or office environment are capable of storing data, including not only financial information for the company, but personal information about customers and employees. You'll need to ensure that any drives or media you plan to reuse or resell are properly wiped clean of any data to prevent the possible loss of credit card numbers, banking account information, Social Security numbers, and other private personal or company data.

If the security of your company's data is mission-critical, you'll likely want to enlist the help of a data destruction service that keeps detailed records of wiping, reset, degaussing, and destruction of your equipment. Many hardware resellers and disposal services will provide you with a complete report down to the final destination of the equipment, whether it be a certificate of destruction or information about recycling activity, such as if it was dismantled into parts for other products. Some hardware disposal companies are even audited by independent auditors to ensure compliance. If you want to continually recycle or resell surplus hardware, you may want to look for a service that will set up an ongoing contract with you.

✔ Partner With A Data Destruction Service

Qualified IT asset disposal vendors will assist your company and take over the responsibility for certification and compliance. Some of the current data compliance standards include those from the Department of Defense (DoD), National Security Agency (NSA), and National Institute of Standards and Technology (NIST). Most data destruction services also provide you with nondisclosure, confidentiality agreements so you can ensure your data will be dealt with securely.

Another benefit of a data destruction service is that it can provide you with a variety of options for handling your various types of storage media. For example, let's say that you want to shred a bunch of old tape drives, CDs, and mobile phones, but you want to merely wipe the data off old hard drives so that they can be reused

in other parts of your data center or donated to worthy causes. Most data destruction services offer you a combination of degaussing and shredding services in both onsite and offsite variations.

"Look to work with companies with a reputable asset recovery or refurbishing program," advises Brett Femrite, director of business development for Rackmount Solutions (800/352-6631; www.rackmountsolutions.net). "They can often provide help in determining the value and final disposition of your unused IT assets and offer a variety of options to suit your needs." For example, a disposal service company may be able to tell you if it would make more economic sense to repair or reconfigure a given product, rather than destroy it or tear it apart for recycling.

By maximizing the value of your equipment, an asset recovery service can also help to improve the green status of the company, because you are helping to make hardware sustainable for a longer period of time.

✔ Evaluate Your Data Destruction Options

When getting rid of old tape media, you'll typically choose between an onsite or offsite service. With an onsite data destruction service, you'll remove the need to deal with a chain of custody documentation, which can become a legal burden and add complexity to the job. For data centers that store a lot of sensitive data and want to physically destroy the data, you'll enjoy the peace of mind that comes with watching the destruction take place. With an onsite data destruction service, the vendor will provide all the equipment necessary to handle your storage equipment.

Some data destruction services offer more powerful shredders at their facilities than mobile shredder services can offer. So if you want absolute destruction that's beyond any type of recovery, choose an offsite data destruction service. A number of offsite data destruction services also double as a reprocessing center that can remarket the parts, so you can get some return value for your used equipment.

✔ Wipe & Resell

There are cases where your old storage and media still has some value left. After all, what might be outdated to a larger enterprise will often still be more than adequate to meet the needs of a smaller organization. However, before you sell your used storage devices, it's important to make sure the data stored on the media or other devices is completely destroyed. Plus, you'll need to look into potential compliance issues related to HIPAA, Sarbox, PCI, or other standards.

If you are clear of compliance obstacles, you should also have your vendor, and other vendors if possible, give you a price quote for how much your used storage assets are worth before you commit. Maximizing the ROI for used equipment is a great way to lower your overall IT budget and put away money for future purchases. P

✔ Get Past The Fear Of Buying Used Tape Media

Tape manufacturers work hard to convince their customers not to buy used tape, but used tape vendors say that those warnings are nothing more than fear mongering designed to increase manufacturers' sales. Most tapes are designed to withstand thousands of mounts in a tape drive. However, many tapes are written to just once and then sit on a shelf for years before companies are ready to dispose of them. These cartridges have a lot of useful life left.

✔ Always Follow Good Tape-Handling Procedures

Certified used tape can be used for the same applications as new tape, and it doesn't require any special handling procedures. However, you should treat it with the same care that you would treat new media.

Tape manufacturers and resellers recommend that you store tapes vertically and never take apart the cartridges or touch the media with your bare fingers. In addition, you should avoid dropping the tapes and keep them away from magnetic devices, including monitors, speakers, electrical motors, and power supplies. You also shouldn't let your tapes get too cold or too hot, and when you move them from one place to another, you should wait 24 hours to let them adjust to the climate conditions before mounting the tapes.

BONUS TIPS:

✔ Know Your Industry Regulations

You should be aware of environmental standards and your industry's compliances and regulations to make sure you and any disposal service you choose are following them throughout the disposal process. Be sure to make a service provider aware of any specific standards ahead of time so the provider can be sure to offer you the highest level of compliance.

✔ Track The Disposal From Beginning To End

Disposal companies should be able to provide a detailed description of the disposal itself and let you track your equipment throughout the eradication process. Make sure you understand where your equipment will be every step of the way and always ask your vendor questions to ensure you're getting what you pay for and the data security or compliance you need.

HOW TO

Determine The Best Backup & Storage Plan

Identify Concerns, Assess Your Needs & Consult With The Pros To Find The Best Fit

Determining the best backup and storage solution and implementing it requires IT to address numerous issues, including knowing how the solution will hold up in the future.

Jason Buffington, senior analyst at Enterprise Strategy Group, says the future consists of "this year and next year and likely the one after that." During that time, however, it's possible the enterprise could outgrow the backup solution if business prospers and must evolve to meet growing needs, Buffington says.

So, how do you best plan for future storage and backup needs? One way, Buffington says, is asking vendors how they'd change their products and solutions now to meet two times, five times, and 10 times more data, "which arguably are only one, two, and potentially three years away, respectively."

Get Started

Because a shift in your storage and backup strategy likely isn't an emergency situation, you should have some time to do a thorough evaluation of the market. What's available? What are the newest technologies? What are your needs now and into the future? Know the answer to those questions and others.

Ben Paxton, technical delivery manager, backup at Barracuda Networks (888/268-4772; www.barracuda.com), says the best place to start is by knowing your recovery point objectives (RPOs). This requires knowing which data must be protected and how to protect it, when, and for how long.

"Determine what data you'll need to restore in case of a disaster and what timeline you have to recover that data," he says. "How much data do you need to protect and how long do you need to retain that data in order to meet those objectives?"

Another focal point for IT should be determining which solutions are reasonable. For example, says Greg Schulz, founder and senior advisor at Server and StorageIO, a Band-Aid approach that buys the enterprise time until it can modernize data protection for the long haul might be appropriate.

In addition to reviewing service-level objectives and requirements, including RTO and RPO, "review data access and usage patterns, as well as identify data that is a candidate for archiving from databases, email, and file systems," Schulz says. Reducing the enterprise's data footprint impact at the source using archiving for inactive data with real-time compression and deduplication can also minimize the impact of data protection, Schulz says.

Key Points

- Determine your enterprise's requirements for retaining and restoring data.
- Decide what type of storage and backup solution makes sense, whether it's a new solution or upgrading an existing one. What technologies will be part of that equation?
- Involve any IT staff responsible for the operation of the solution currently in place in the process for selecting a new or upgrade solution.

Know Your Options

There's a good chance the storage industry has changed considerably since the last time you evaluated options. Develop a solid understanding of your options and how they can benefit your environment.

One thing to remember, Buffington says, is that your infrastructure is not that unique. Other companies have probably already addressed and overcome challenges identical or similar. Enlisting the help of an outside expert—"preferably someone who helped you deploy or maintain your existing infrastructure"—can ease the burden on IT.

Most analysts agree the best approach is some sort of hybrid storage, combining both solid state and hard disk drives, and even a mix of onsite, disk, backup, archiving, and replication.

Don't forget about the cloud, Paxton says. "Storing data in the cloud allows for location-agnostic data protection and is more affordable and less complex than managing a DR [disaster recovery] site."

Paxton recommends having an all-in-one solution that will back up all your data, keep a local repository of that data, and then securely transfer it offsite without leveraging another third party. "Standardizing on a single vendor helps eliminate complicated setups and configurations, and simplifies troubleshooting and data recovery processes. Going to one vendor for your backup/storage solution can also significantly reduce cost by avoiding separate licensing fees."

When evaluating options and developing a strategy, key concerns include:

Data safety. Be sure to implement redundancy and strong error correction.

Uptime. You need reliable devices and software, along with failover protection and round-the-clock support.

Security. Cover items such as user access policy, encryption, firewalling, and malware prevention.

Speed. Look for the fastest speed available, which often involves SSDs in some form.

Manageability. Evaluate the product for usability; you may need new software for storage management and data protection.

Cost-effectiveness. Think in terms of cost per gigabyte and cost per IOPS. Deduplication, virtualization, and provisioning features can help you avoid wasting money and power on unnecessary drives.

Scalability. Make sure the storage solution will grow with your organization's needs.

Prepare For Obstacles

Beyond addressing cost, growth, available resources, and staffing issues, Schulz says, a bigger obstacle for IT can be having to rethink how it has previously protected and stored data. This may require stepping back from older technologies, he says, and looking at modernizing data protection vs. simply swapping out media, such as disks for tapes.

Overall, Schulz says, take this opportunity to "find and fix problems, enable scale, [and] reduce complexity and cost while supporting growth." P

Top Tips

✔ **Spend what's needed.** "While everyone wants to spend pennies to save dollars, real data protection may cost dimes, not pennies—but you'll still be saving dollars," says Jason Buffington, senior analyst with Enterprise Strategy Group. Often, management may underestimate the financial impact downtime or lost data has until it's too late, he says. "In today's market, that may mean losing a key client or potentially being unable keep the doors open just because you can't get your data back," Buffington says.

✔ **Don't assume.** Buffington says one obstacle smaller enterprises may encounter is assuming they must match the protection levels of large enterprises. "Don't overestimate what you need, or sticker-shock will kill you," he says. But, he adds, "Don't underestimate, or you won't be able to recover. Understand what you need and it will 'fit' financially. Just be sure that you have the right tailor so the 'fit' is correct."

Action Plan

- Assess the current data environment.
- Determine the key platforms that need protection.
- Pinpoint areas where the business is exposed.
- Analyze how lost data or productivity would impact the business.
- Review RTO and RPO requirements.
- Identify alternatives to what's currently being used.
- Involve staff responsible for the current plan to review potential new solutions.
- Implement the storage and backup tools and technologies best suited for business.
- Analyze and make adjustments where necessary.

Get Started

Selecting and implementing a storage and backup solution can entail using metrics, measurements, and management tools that offer insight into the current solutions in place and the data itself, including how it's being used and how often it changes and is accessed. Reviewing RTO and RPO numbers, protection frequency, and retention cycles may be warranted. Ultimately, using a data footprint reduction approach, upgrading media, or using a cloud-based option may make the most sense.

SIX QUICK TIPS

Check The Health Of Your Data Center

Build A Better Environment Through Assessments, Monitoring & More

It's a fact of life that every data center will run into the occasional inefficiency or vulnerability through the course of a facility's lifetime. Servers will reach their peak capacities, storage solutions will fill up, and other issues are certain to crop up. The key to responding correctly to these occurrences and maintaining your data center's performance is to always be aware of what's happening.

It takes a combination of data center assessments, monitoring solutions, optimization improvements, and more. But if you commit to keeping tabs on every aspect of your data center upfront, you will be well prepared and avoid largely preventable issues down the road.

✔ Perform Data Center Assessments

Jenna Maertz, consulting analyst at Info-Tech Research Group, says data center managers that don't conduct regular data center assessments simply aren't doing their jobs. There's no way to make sure your data center is in the best possible health without going through every aspect of your facility on a regular basis.

Because technology evolves at such a rapid pace and data centers are adding new equipment every day, it isn't enough to set it and forget it. You need to make sure the building itself is in peak condition and focus on individual pieces of equipment to get a more solid view of your data center. And you can't wait until there's already a problem to react and respond.

"Organizations conduct regular security and enterprise risk assessments, but data centers often slip through the cracks," Maertz says. "This is an essential management task that can save you from future aggravation. In a recent survey, Info-Tech found that 53% of respondents do not perform regular data center assessments. These organizations generally only conduct assessments when there is a trigger, such as a disaster or an issue that needs to be resolved."

✔ Improve Your Monitoring

In addition to performing data center assessments, you should constantly monitor your equipment. Having a consistent metrics-gathering process throughout your organization can aid in the assessment process and help you see the bigger picture.

But monitoring can sometimes lead data center administrators down the stressful path of overwhelming themselves with information and feeling as if there's no way to address all the issues. That's why Maertz says companies need to be more efficient with their monitoring and focus on what's most important, rather than monitoring anything and everything.

"For organizations that want to be more diligent about monitoring their data centers, but don't have endless time or resources, it is important to be smarter

about what you monitor," Maertz says. "Don't try to map the whole world. Focus on the key metrics that will give you an indication of how well you are performing, without putting a strain on your resources."

✔ Use Existing Resources More Efficiently

If you notice that your data center's performance is lagging, you may think the best course of action is to buy new equipment to replace your existing solutions.

Jay Pultz, vice president and distinguished analyst at Garter, says that in some extreme cases, when a data center "runs out of fundamental facility resources, drastic steps need to be taken, like building a new and bigger data center."

Data center overhauls can be pricey, so it's best if they can be avoided. With "most situations we see, the data center isn't really out of these resources," but rather "these resources are just being used inefficiently," Pultz says.

"Say we have a new data center that was carefully optimized with respect to critical resources," Pultz says. "Over a few years, significant changes take place where, for example, several racks of new servers are added. If that new equipment is located where it happens to be convenient or all the necessary resources are available, then it won't take many [of these] changes before usage is far from optimal."

In other words, your data center's "bad health" may actually be the result of improperly utilized equipment. One server may be completely overloaded with requests and reaching peak capacity, while another server may be practically untouched. If you can find a way to move tasks and processes to the underutilized server, then you improve your efficiency and improve the overall performance at the same time.

✔ Consider Incremental Optimization

In addition to utilizing servers and other equipment more efficiently, Pultz says that data centers need to optimize their resources "each time a major change is made," which is referred to as "incremental optimization."

Instead of waiting until your infrastructure hits critical mass to respond, be proactive and use new equipment purchases or upgrades as opportunities to improve your data center as a whole.

"Many data center infrastructure management (DCIM) tools on the market today have the capability to offer data centers and facilities more options and 'what-if' scenarios," Pultz says.

You can use these tools to know, well ahead of time, the potential results of an infrastructure change. By mapping out your facility and getting a clear view of every piece of equipment, you can make sure servers, storage arrays, and networking solutions are all in their ideal places to optimize your data center performance. P

✔ Know Which Metrics To Track

It's important to have monitoring systems in place to let you know whether your data center is running at peak performance, but it's also crucial to gather and track metrics using those same systems. After all, if you only use your monitoring solution as an alert for when something goes wrong, you won't be adequately prepared to respond to issues and will be caught unaware more often than not.

"Start with service delivery metrics, like uptime, capacity, growth, and troubleshooting," says Jenna Maertz, consulting analyst at Info-Tech Research Group. "As you get more mature in your processes, you can start assessing resource allocation and cost-to-serve. Focus on metrics that are specific, detailed, and measurable. Don't try to create a metric called 'server performance.' Try to get to a more specific metric, such as 'peak daily CPU utilization %.' "

✔ Use Metrics Wisely

Once you've pulled metrics from your monitoring solutions, you need to determine how you're going to apply them. But it isn't enough to focus on a single day, week, or even month of data to come up with an entirely new business approach. You need to gather metrics over an extended period of time in order to make informed decisions about your data center.

"Metrics are only valuable when they are repeatable," says Jenna Maertz, consulting analyst at Info-Tech Research Group. "You will gain only limited insight from a single data point, but a year's worth of data points suddenly becomes useful in showing the life of that metric."

BONUS TIPS:

✔ Is Cooling A Culprit?

If your overall data center health is in question and certain pieces of equipment seem to be failing on a consistent basis, then you may want to make sure your cooling systems are working correctly. A solid monitoring system will include temperature as a tracked metric, so make sure equipment isn't overheating and leading to bigger issues.

✔ Employee Vigilance

Monitoring systems are helpful to pinpoint specific issues in the data center, but don't forget to talk to your employees about what they witness. Data center employees work in and around servers and other equipment, so it's likely they will spot gradual performance degradation as well as other problems. Plus, these employees may be the same people who will respond to failures when they occur, so it's better if they're vigilant and always aware of their environment.

HOW TO

Improve The Security Of Enterprise Passwords

Techniques & Technologies You Can Use To Bolster Protection

Close your eyes, and you can almost picture the virtual bull's eye that cybercriminals are plastering on enterprises in increasing numbers as they apply new techniques to acquire and break passwords in the hope of scoring a payload.

Despite headline after headline reporting successful hacker attacks, many enterprises still aren't doing enough to shore up password usage among employees in their data centers and across the company as a whole. This includes enterprises lacking a true representation of the number of privileged accounts that exist and how frequently passwords for those accounts are being shared or changed. Here are some ideas, methods, and techniques to enhance enterprise password security.

Start By Measuring

Using password-cracking tools to measure the effectiveness of current password security is a good starting place for any enterprise. Wendy Nather, research director, security at 451 Research, says many such tools are free and help spot where the biggest weaknesses might be. Another important step is checking all accounts for default passwords, including all networking equipment, servers, and commercial software, she says. "Many systems are shipped with well-known default passwords, and this is the biggest vector for attacks today because they're too easy to find."

Where password management is concerned, Bob Tarzey, analyst and director at Quocirca, says the most important aspect is reducing the number of passwords to remember. Doing so makes it more likely employees will "keep them in their heads," he says.

"For key business systems, one password is preferable, and for that you need a single sign-on system. Of course, that means one set of 'keys to the kingdom,' so that should require strong authentication, perhaps with context awareness added in." Tarzey suggests adding hardware tokens (possibly expensive), mobile phones as a second ID source (convenient), or context awareness ("why would a UK user be logging in via an Eastern Europe IP address?") to passwords.

Take Preventive Measures

The use of honeywords is one of the newer password-security methods gaining attention. The concept essentially involves packing a password file with decoy passwords for each authentic user password.

Key Points

- Start improving password security by testing the strength of the passwords currently being used.
- Implement such preventive measures as using long passwords that mix characters, capital letters, and numbers.
- Advise employees on ways to improve password security and provide consistent, ongoing training of policies, procedures, and tools.

In short, a hacker who successfully hacks a password list still wouldn't know a real password from the honeywords.

Tarzey says in addition to context awareness, privileged user management is another preventative technique to consider. This entails privileged access management and ensuring "the existing environment is cleaned up—that all default privileged user accounts (root, etc.) are closed down and that all privileged user access is associated with named users (stop privileged user account sharing, for example)."

Michela Menting, senior analyst at ABI Research, says ensuring password complexity and length are also important preventive approaches. "The longer the password, the longer it takes to crack. A mix of characters, capital letters, and numbers in a long password works well," she says.

Although password security strength tests are an option, she says, metering can vary significantly depending on the test's publisher, so don't solely rely on them.

Nather says passwords with at least 12 characters will immediately make a big difference. Additionally, she says, for enterprises that have custom applications, ensure they're stored in hashed format, not cleartext. "If you can email a user his forgotten password, then you're storing them in cleartext and need to fix it," she says.

Whatever steps you use to improve password security, Nather says, ensure the new measures aren't "going to create so many obstacles for employees that they're just going to work around them." Be sure to consult employees on proposed password security changes, make them understand the reasons for the changes, and involve them in helping design the solutions, she says.

Be Willing To Change

For Menting, a significant part of good password policy is changing human behavior and attitudes.

"Most people don't want to be bothered or don't want to remember many long passwords," she says. "However, they do (or did) remember telephone numbers well enough. People need to understand that if they value security, they need to make the effort." At the least, ensuring good password policy must account for continuous, recurring user engagement and awareness. "The more people are 'hounded' about password security, the faster it will become accepted," she says.

Nather says "everyone wants to reuse the same passwords everywhere; it's part of the human condition." Whether talking data center or other employees, enterprises should provide them a secure password manager application that enables storing a wide variety of passwords, she says.

"Using different passwords as often as you can will limit the damage, even if one account is compromised," she says. "This is hard to implement, but it reduces a lot of risk." P

Top Tips

- ✔ **Get a fresh perspective.** Seeking a third-party perspective about password security can make sense and help mitigate associated risks when working with older systems you can't change, says Wendy Nather, 451 Research research director, security.
- ✔ **Educate employees.** Bob Tarzey, Quocirca analyst and director, says to combine training, updates, and a clear written password policy for employees. Ensure the policy details the penalties for breaching the policy. Various third parties offer services that launch spoof attacks on organizations to identify gullible employees who need updated training, he says.
- ✔ **Avoid sticky notes.** Nather advises making passwords as long as possible and regularly checking for default passwords that need to be changed. Also, "get secure storage for passwords so that they don't end up on sticky notes on the monitors."

Action Plan

- Check that a password policy is in place.
- Ensure passwords are strong and changed frequently.
- Prevent the reuse of passwords.
- Keep employees from divulging passwords.
- Apply password policy consistently throughout the company.
- Ensure policy covers all employees, endpoints, applications, and systems.
- Store passwords securely via encryption and not in plain text.
- Regularly test database server security to ensure protection against SQL injection, X-site scripting, and other types of attacks.

Get Started

Some approaches for improving password security can cost little or nothing, including using free password-cracking tools. Password vaults require a monetary investment but may be necessary depending on the enterprise. Additionally, investing in staff time to pore through systems and clean up related passwords is a possibility. System passwords, meanwhile, may be difficult to change and could affect many processes or applications. Rewriting an application to store passwords securely may also be important for employees and customers. Other possible investments include implementing a single sign-on system, privileged user management, strong authentication, and context awareness.

SIX QUICK TIPS

Choose The Best Servers For Virtualization & Consolidation

Compare Capacity, Memory, Network Connectivity & More

By virtualizing applications and efficiently using available server resources, you can cut down on the physical equipment you need, saving space and money. But you can't implement virtualization and benefit from consolidation if you don't have the right servers for the job. We'll cover some of the most important features to look for and help you get the best performance for your money.

✔ Choose Memory & Networking

As x86 servers, which are good fits for virtualization, start to approach the commodity level, it makes sense to focus on more than just the processor. John Sloan, lead analyst at Info-Tech Research Group, says the processor type is "not going to be a differentiator from one brand of server to the next." Instead, he says, consider where the potential bottlenecks would be if you implemented virtualization and use those predictions to pinpoint important features.

Memory can limit the number of virtual machines (VMs) a server can support even more than a processor. "When you start to crowd in a lot of VMs, especially with the latest generation, you're not liable to hit the ceiling in terms of concurrent VMs running on a single processor," Sloan says. "But where you might hit a bottleneck or a ceiling will be in memory and how many VMs can concurrently run and share that memory."

Sloan says it's also important to consider the server's networking capabilities, particularly for data centers that separate their servers from their storage arrays and connect them via a network such as a SAN. A lot of companies still have 1GbE switches that "can top out the amount of capacity to those arrays," Sloan says. If you don't have at least 10GbE or your network connectors and bandwidth aren't up to par, he says, it will affect your ability to run most consolidated infrastructures.

Some vendors are "almost reinventing the server," Sloan says. Instead of only putting memory, a processor, and some networking capabilities in the servers and then connecting them to separate storage, vendors are building high-capacity, fast storage solutions into their servers, which can, in some cases, cut SAN out of the picture. "If you consider that processors are getting to the point where they can run a lot of different workloads and a storage controller, you can essentially have everything together in one box," Sloan says.

✔ Make Sure The Servers Fit Your Requirements

A lot of what you look for in a server will depend on the type of virtualization software you want to use. Make sure your vendor's servers support your chosen software. From there, a vendor should be able to show you the key features you'll need to get the most out of virtualization and help you consolidate through improved performance and efficiency.

"Since the purpose of virtualization is to get more productivity out of a single server while reducing administrative overhead, companies generally want to find a high-performance, multiprocessor system with

large amounts of memory, hard disk space, and network bandwidth to meet their requirements," according to Supermicro (408/503-8000; www.supermicro.com). Depending on your applications, you should also consider the redundancy options, including level of RAID for storage protection, redundant power supplies, and multiple network interfaces for load balancing and redundancy.

✔ Match Servers, Applications

You need to find a server that can fully support your applications. "If the company is going to run mission-critical applications, then the server will need to be configured with as many redundant components and features as possible for maximum availability," according to Supermicro. "If the availability of the VMs is provided via software management across multiple physical servers, then the reliability requirements for individual servers are different." This is especially important because the reliability of servers, down to the guaranteed 9's of availability, will affect the price.

Sloan says to be careful about vendors that focus too heavily on consolidation ratio, which is the maximum number of VMs a server can handle. This can be particularly misleading because some applications require fewer VM instances than others, which could lead to paying for features you don't need.

Know what resources each virtualized application will require. "The latest generation processors and the capacity you can get with two processors may be more than enough for your consolidation needs and may be more than enough to run even high-end VM requirements," he says. "It's about cost per capacity, as well as raw capacity."

✔ Refresh, Rather Than Retrofit

You can retrofit servers for virtualization, Supermicro says, but it depends on their age. If you have one- or two-year-old servers, you can upgrade internal components such as processors, memory, hard drives, and PCI-E flash memory cards or even replace server nodes with more advanced ones to build a better multinode system, according to Supermicro.

But just because you can retrofit existing servers doesn't mean you should. Sloan says companies used to see virtualization as "investment protection and a way to extend a server's useful life." However, if the servers are too old, it could erase the potential gains. "Virtualization tends to go to the lowest common denominator," Sloan says. "If you have a bunch of machines, it will virtualize to the lowest processor." This could mean that you are getting the same low utilization rates and not taking full advantage of available capacity.

Today's x86 servers "are commodity and have a set life cycle, so usually it's more about planning for your refresh than finding ways to upgrade," Sloan says. He uses desktop PCs as an example of where servers are today. "In the early days, you could add a new hard drive or upgrade your memory. But what happened is you eventually realized that you could spend all of your time and effort doing that, or you could just wait another year and get a new PC that had twice the capacity." P

✔ Look For Integrated Virtualization Management

Virtualization is great technology to take advantage of, but only if you have a way to monitor and manage the underlying software. "If, for example, you have a blade system, you want to look at how the virtual infrastructure is managed," says John Sloan, lead analyst at Info-Tech Research Group. "You also want to look at how that management of the virtual layer integrates with management tools for the overall infrastructure. In a virtualized and consolidated world, hardware is capacity and you just want to make sure you get the best capacity and best utilization for the dollar."

✔ Reduce Your Physical, Power Footprints

One of the biggest benefits of consolidation is the ability to lower the physical footprint of your data center by minimizing the number of servers you need. But there are some other ancillary benefits of consolidation that you may not think about initially, such as lowering your power consumption.

"When we're evaluating blade systems, we do look at power efficiency ratings and things like that," says John Sloan, lead analyst at Info-Tech Research Group "The original blades were reducing the physical footprint, but they tended to suck a lot of power and generate a lot of heat, so maybe you could avoid having to expand your data center or get a new data center and there were savings there, but you were still paying a lot for facilities. You can now look at power consumption and energy efficiency ratings, because some of the newer-generation gear is cutting down that consumption curve."

BONUS TIPS:

✔ Look For Certifications

When looking for servers for virtualization and consolidation, Supermicro (408/503-8000; www.supermicro.com) recommends choosing a multiprocessor system that has been certified compatible with the intended virtualization software. You also need to select certified components that support virtualization with drivers readily available. If a server or component is certified for virtualization, then you know you'll get the best possible performance for your specific environment.

✔ Maximize Efficiency For Better ROI

The point of virtualization and consolidation is to make your data center more efficient and help you save money. The best way to do that, according to Supermicro, is to maximize the capacity of the processing cores, memory, storage, and networking bandwidth and optimize the resource allocation for better total cost of ownership.

SIX QUICK TIPS

Prove (& Improve) The ROI Of Your Projects

Properly Calculate ROI To Find The True Cost-Saving Benefits Of Purchases

Many purchasing decisions made in the data center world are centered around a product's expected return on investment (ROI).

But ROI can be calculated in many different ways by different types of manufacturers and organizations. Some companies focus on how much return they can expect, while others are only concerned about when that product will pay for itself. However, the key to accurately calculating ROI is to take every aspect of a purchase into account and not limit yourself to inside-the-box thinking.

✔ Use ROI The Right Way

Jay Pultz, vice president and distinguished analyst at Gartner, says that data centers need to realize that there are several metrics that are crucial to calculating ROI. He says that these metrics all come from an "analysis technique called discounted cash flow," which takes the future value of a product into consideration during the purchasing process.

Pultz warns that companies will often only account for the amount of time it takes to recover the initial investment, rather than understanding that "ROI is a percentage, not a time period."

Darin Stahl, lead research analyst at Info-Tech Research Group, says that some companies will get so wrapped up in ROI figures at the time of purchase that they forget to go back and "revisit the results that you realized against the original investment case." But you'll never know how much of a return you saw on your initial investment if you don't monitor performance and compare that analysis to what was promised in the first place.

"You've seen business cases where you say 'in three years, we're going to do this, this, and this,'" Stahl says. "But after three years have gone by, do you actually go back to revisit those to see if that's true? You'd be surprised at how many organizations do not. If that's the case and you don't do it at all, then why bother?"

✔ Focus On Business Needs

Stahl warns that the data center is sometimes so separated from the business itself that purchasing decisions and business plans aren't discussed as much as they are handed down and followed. Instead, Stahl says that data center managers should look at the investment case the business is submitting and suggest equipment that will meet those needs without going overboard on cost.

But in addition to giving the business side advice on what new equipment to purchase, the data center manager can also suggest other ways to save money with regards to aging infrastructure.

"In ever so many data centers, there is hardware and infrastructure that was put in place to support the marketing thing of the month," Stahl says. Nine years later, they've stopped using them, there are five

customers on it that are kind of grandfathered in, and they're just waiting for those records to go away, but I'm still running all this big equipment. Go back to the business and realign. Can I move this workload, stop this workload, or can I run it on a different tier of my service delivery because it is no longer mission-critical? Stop funding that stuff, because ultimately it erodes your ROI for everything else."

✔ Aim For Achievable Goals

Pultz says that companies shouldn't "get overly heroic to come up with the financials that will perhaps get a business case approved," especially if an ROI figure isn't "realistically achievable." He says that some solutions may claim to pay you back in less than a year or claim that you'll see ROI in the triple figures and that such claims "require real scrutiny." If the ROI of a specific product seems too good to be true, then it's up to you to dig a bit deeper and make sure your expectations aren't too high.

Stahl says that companies should "reach for just good enough" instead of overbuying on equipment. For example, he says that some data centers will go out and buy the newest server with three power supplies because there may be a failure. But Stahl says that we're in a "virtualized world" and that many servers have failover systems in place that prevent major downtime. He recommends that companies simply look at their current and near-future business requirements when making a purchasing decision and avoid purchasing more expensive equipment with capacities and features they may never use.

✔ Consider Leaving Your Existing Infrastructure As-Is

When thinking about ROI, data centers tend to focus on the "investment" part of the term, which could lead to only thinking about new purchases. But Stahl says that there could be ROI-based value already in the data center if you consider looking at financials over a longer period of time and avoid limiting yourself to a two- to three-year time frame for success. Some hardware or software solutions take five years or more to provide a solid return, but if you cut the program short, you'll never see those gains and perceive the investment as a loss.

"Often, we're charged with building out a business case, and it's two or three years because it aligns with how the business depreciates assets," Stahl says. "But in reality, your refresh cycle on these things may be five or six years. That's really what you have to look at because that's what your real exposure is from a cost liability standpoint. You have to extend it to the life of the equipment and not just the three years that IT accounting is asking for because of depreciation." P

✔ A Reason To Think Long-Term

Darin Stahl, lead research analyst at Info-Tech Research Group, says that some potential money-saving strategies can be misleading. "A really good example of that would be cloud storage or storage as a service," he says. You might see that other companies have had success with cloud storage or believe that such a service would save you money, but you might realize over time that those are simply short-term gains.

"Recently, I modeled with a customer a 30TB [cloud] instance, and they had about a 14% growth rate," Stahl says. "By the time they got to year three, their data at rest, because they wanted enterprise-class storage, was going to cost about $3,800 a month. The ROI goes away on that pretty quickly when I could just buy cheaper SAN and control my costs. That's the magic of looking at those longer numbers and really getting a sense of what that exposure really is."

✔ Move Beyond Efficiencies

One common mistake data centers make when looking at ROI is to have the blanket goal of doing more with less, says Darin Stahl, lead research analyst at Info-Tech Research Group. Because "doing more with less" is a vague statement, it makes it difficult to measure whether a new approach or new piece of equipment is actually making a financial difference.

"If you are going to do more with less, then your business case should describe what you're going to do with those savings," Stahl says. "Are you going to invest in innovation? Don't just describe efficiency, unless you're prepared to trade that off. If I'm just efficient but I'm spending the same amount of money, where's my ROI in that?"

BONUS TIPS:

✔ Look At More Than The Initial Purchase

In order to get the most accurate ROI calculation, you can't just include the purchase price of a piece of equipment and compare that directly to how much money you've made or saved. Jay Pultz, vice president and distinguished analyst at Gartner, says you also have to examine total cost of ownership, which includes the "total cost of hardware, software, staff (which is often the largest cost component), space, power," and more.

✔ Who Analyzes Your ROI?

Some companies are capable of conducting their own ROI assessments and may have employees who are experienced with the process, but Pultz adds that you can also use a vendor-independent firm to help in the analysis. He recommends either performing the analysis yourself or using an expert third party, because "free vendor ROI [assessments] are notorious for having hidden or hard-to-find assumptions that bias the analysis."

SIX QUICK TIPS

Recover From Water Or Flooding In A Data Center

Steps & Precautions To Take After The Damage Has Occurred

Many things we can prepare for. Many things we can't. Data center personnel, for example, can painstakingly put together and test a disaster recovery plan, but when disaster strikes, they can still encounter situations they couldn't foresee.

As Hurricane Sandy and recent events in Europe have shown, this goes for flooding and other types of water-related issues. How do you recover after flooding or water damage? Here are some tips and advice from experts.

✔ Contain The Damage

From an IT perspective, the first task data center personnel should tackle following a flood or water damage is ensuring systems can fail-over successfully to an alternative location, says Rachel Dines, senior analyst at Forrester Research. Next, she says, "try and contain the damage by either removing equipment that hasn't yet been damaged or try to contain the flooding." Before resuming normal operations, you'll need to decide what infrastructure can be saved and what must be replaced.

Frank Trovato, consulting analyst at Info-Tech Research Group, advises initially turning operations over to the disaster recovery site and then beginning to assess the site and damages before immediate cleanup and site stabilization.

Trovato says to first focus on life safety by involving restoration professionals to address any power issues before permitting staff back into the site. "Even if there's a little bit of water, there can still be a hazard," he says. "Once the site is deemed safe, then you can begin the process of assessing the infrastructure and what needs to be removed, what needs replaced, and so on."

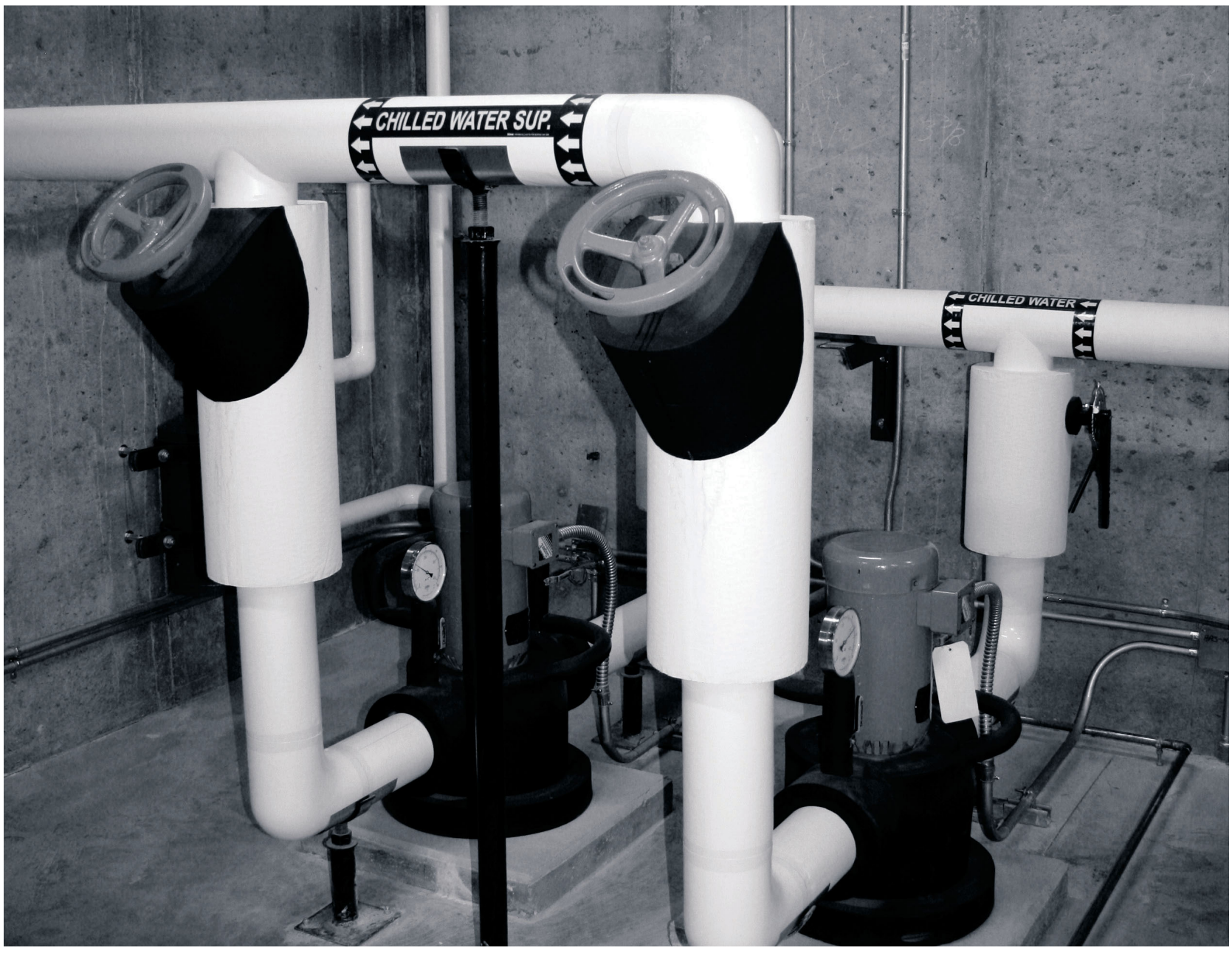
✔ Learn From History

Beyond being a wake-up call for organizations located in high-risk regions in terms of flooding, power and network outages, and transportation disruptions, Dines says, "Hurricane Sandy demonstrated the long duration that a disaster can last." Some companies couldn't resume normal operations for weeks or months following Hurricane Sandy.

"Another lesson we learned from Sandy was around communications with employees, partners, and customers," she says. With networks down, power out, and cell phones overwhelmed, companies used social media, automated messaging systems, and satellite to ensure employees were safe, communicate with customers, and work with partners to start recovery, Dines says.

Trovato says to not underestimate how long a disaster could force a company out of its primary site. "Especially with the kind of flooding we're seeing in Europe and with the Hurricane Sandy scenario, your location may not be accessible for one or two months or maybe even longer, depending on how long the cleanup takes," he says.

Companies will often have limited agreements with vendors providing disaster



recovery sites, he says. "If you're looking at months outside the primary site, you'll probably need to start working on a transition plan to either start looking at another site or negotiate with the vendor to extend your stay," Trovato says. The key is knowing where you stand and what's involved if you need a secondary site longer, he says.

✔ Don't Overreact

Although disasters are possible, Trovato says, organizations shouldn't overreact to events such as Hurricane Sandy. Such flood-like events can cause companies to intently focus on flooding and protecting against it, "but the next time it's a tornado or fire." Trovato says to instead focus on resiliency by having a sound secondary disaster recovery site lined up and a well-documented and well-tested disaster recovery plan.

"If you try to pick up the potential threats one at a time, there's always going to be something you didn't anticipate," he says. Regardless of incident type, he says, "you want to be able to recover, and that means you need another site and it's far enough away so that it's not affected by the same disaster."

The next stage is improving resiliency at the primary location. This includes having backup generators, server clusters, and similar items in place, which "will help you for the vast majority of incidents," Trovato says. Overall, he says few disasters result in organizations being out of a primary location for lengthy periods. Info-Tech has found that natural disasters only account for about 5% of major interruptions, he says. "Far more are attributable to hardware/software failures and power outages or network outages. The vast majority of incidents are local in nature," he says.

✔ Consider DRaaS

Disaster recovery as a service, or DRaaS, is becoming more common. The benefit of such solutions, says Karyn Price, analyst at Frost & Sullivan, is that, in event of a weather-related event that affects a widespread geographic region, a company can still geographically disperse its data, creating a replication scenario vs. just a backup one.

"You've got a much faster recovery point objective, meaning you're continuously backing up that data and replicating that data to your mirrored servers elsewhere, and you'll also usually get up and running faster," she says. "The vendors I've spoken to are doing this anywhere from between one to four hours, whereas traditionally backups could take a couple of days once you declare a disaster."

Trovato says Info-Tech recommends a hybrid approach that involves putting less-critical applications suitable for an IaaS platform in the cloud so they can be quickly brought online and the risk of using a cloud service is mitigated due to the less critical nature of the applications. For mission-critical systems, he says, the company may want them to be physical systems at the disaster recovery site, as you "don't want to depend on the cloud vendor for your recovery time." P

✔ Don't Make Matters Worse

Info-Tech Research Group consulting analyst Frank Trovato says you'll typically want to enlist the help of a restoration professional. One of the first things to happen upon water entering a data center, he says, is "typically there are tools in place to ensure power gets shut off automatically, not just for safety hazards but to protect your equipment."

Thus, "if you have people come in mucking about and turn the power back on before the site is safe and dry, you can in fact create more damage vs. leaving it to the professionals" to deem it's safe to restore power, he says.

✔ Evaluate Equipment

Among the tasks that companies will need to take on following a flood or other water damage is having various vendors recertify the equipment affected by the water.

Info-Tech Research Group consulting analyst Frank Trovato says if vendors won't recertify equipment, you'll need to replace it. Essentially, he says, vendors act in an insurance-claim manner by coming onsite and validating the equipment. Such equipment could appear to function fine following water damage, he says, "but you won't really know it's fine until it's thoroughly tested and checked."

Forrester Research senior analyst Rachel Dines says if the flood water that is involved was salty, "there will most likely not be much that is salvageable."

BONUS TIPS:

✔ Plan For Emergencies

Forrester Research senior analyst Rachel Dines says if an enterprise doesn't have an operational disaster recovery site or if that alternate site is also compromised, it's possible to work with partners to bring in emergency equipment, generators, and fuel to keep operating during a crisis. "However, if this is a widespread event and you haven't pre-contracted for these resources, you will likely struggle to procure them," she says.

✔ Be Prepared

"Running tests and exercises of DR plans is one of the best ways you can make sure you are prepared for any type of event," Dines says. Focus testing on the most likely risks, which will vary depending on geographic location and industry, she says.

Info-Tech Research Group consulting analyst Frank Trovato says to make sure "you have a well-documented and well-tested DR plan, reliable DR site, and backup strategies that align with business requirements."

HOW TO

Find Specialty Racks & Cabinets

Know What To Look For & Where To Look When You Have Unique Needs

Not all data centers are created the same. Some, for example, operate under unique conditions that require special equipment, including specialty racks and cabinets. Here's a look at what options are available and how you can identify those situations and environments that might justify purchasing them.

Spot The Signs

The first step in the process is to identify whether you have a need that a specialty rack or cabinet can fulfill.

"A specialty rack or cabinet is typically going to be more pricey than a standard model," says Kristen Speranza-Diamond, vice president of Hergo (888/222-7270; www.hergo.com). "Before making that investment, it is important that the user has a clear idea of the problems that currently exist and how this specialty solution is going to assist them in clearing those obstacles. Will this product prove to be an effective, quality solution toward meeting my end goal?"

For enterprises still in the planning phases of designing a layout for new data center space, Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says reviewing the topology will help determine if a specialty cabinet or rack is required.

She adds that in the early phases, asking questions such as if the company foresees having excessive cable bundles in particular areas and if a neater, more efficient, large-scale power solution is being considered "will help you accommodate your data center for ease of management and future growth."

If you are attempting to improve on the current data center setup or have a particular concern such as insufficient cooling or cable clutter), "these issues can often be determined by how well your equipment is operating, how easy it is for you or your staff to troubleshoot issues, or a visual assessment," she says.

Common Scenarios

Although standard racks and cabinets will serve most data centers needs, Gina Dickson, director of infrastructure products at Black Box (877/877-2269; www.blackbox.com), says there are four common scenarios where you'll want a specialty rack or cabinet: environmental conditions, noise, space considerations, and cooling.

Viars says certain topologies call for IT to drop extremely large bundles of cable into one rack or cabinet. Sometimes, these cable bundles can be so large that a standard cabinet cannot accommodate them. In other cases, Viars says, managers might need specialty cabinets to provide efficient

Key Points

- Numerous situations can create a need for a specialty rack or cabinet.
- Cabinets and racks featuring network cable management, power distribution, and water cooling characteristics are among the most popular.
- Consulting a knowledgeable sales representative is arguably the best place for companies to begin.

cooling and power in an environment that doesn't have raised flooring or one that operates under space constraints.

Know What Is Available

Several types of specialty racks and cabinets have emerged as the most popular.

Network cable management. "These racks and cabinets are specially designed to accommodate applications with higher-density cabling," Viars says. Such racks feature additional space for handling cable bundles built into the sides of the rack, she says, which creates a wider rack that still maintains standard 19- or 23-inch rack mounting. Buyers can purchase these with cable management built-in or their own preferences. "These racks are especially beneficial for switch applications where you might have bulk cabling coming off of the front of the rack and routed toward a single side," she says.

Power distribution. These provide flexibility in providing power to equipment. "A common issue that can occur when providing power down a row of cabinets the traditional way is that it requires a large quantity of seal-tight cables to be run under the raised flooring to the cabinets," Viars says. "Not only are these cables expensive, but in the larger quantities, they also restrict airflow underneath the floor, reducing the overall effectiveness of your cooling."

In addition to providing a neater system that makes maintenance easier and less expensive, using a power distribution enclosure can also "be the way to go if your data center doesn't have raised flooring," Viars says. "This solution will significantly reduce the number of cables that would need to be run in overhead cable trays."

Cooling. "Even in the most well thought-out layouts, data center managers still have to address issues caused by hot air recirculation and uneven cooling," Viars says. "This can be especially troublesome when trying to integrate new equipment."

Dickson says there are cabinets that combine equipment mounting and fans or cooling, which can provide a closed-loop cooling system that includes a sealed NEMA-rated cabinet and an AC unit. "These are a great alternative for non-data-center locations such as IT closets or server rooms," she says.

Viars says water-cooled enclosures are "ideal in situations where you are trying to integrate a high-density cabinet into your layout or if you have issues keeping a particular cabinet cool with your current solutions."

Other common options. Dickson says other cabinet types include wallmount versions designed to help save floor space or cost and sound-dampening cabinets for use in areas where people are present or working. "They dampen equipment noise and, in many cases, have great aesthetics design to look like office furniture," she says.

Speranza-Diamond adds co-location cabinets to the list. Such cabinets are built for environments that need separate, secure equipment bays for multiple users. Two other options, she says, are seismic cabinets that can withstand earthquakes or rigorous movement and NEMA-rated outdoor cabinets that are manufactured with special corrosion-resistant finishes to hold up against outdoor elements. P

Top Tips

- ✔ **Don't skip security.** For enterprises that experience a considerable amount of traffic passing through their data centers, including by visitors from outside the company, a specialty enclosure that features a locked cage or other integrated, security-minded features can be appropriate.
- ✔ **Look at thermal control options.** One possibility for data centers in need of thermal management is interchangeable doors that provide thermal-control abilities built in. Options include those that IT can order as a new rack and those that fit over existing racks in a retrofit fashion.
- ✔ **Go vertical.** Many data centers find themselves faced with the dilemma of needing to add equipment to their data center operations but lacking the actual data center space to accommodate more equipment. For such situations, there are racks and cabinets available that are deeper and also provide the ability for IT to expand upward, offering the means to use existing space in a more efficient manner.

Action Plan

- Assess your current data center situation in terms of physical and configuration traits.
- Review the various topologies that might be at play.
- Note any concern areas, including security, heat, and cabling.
- Speak with a sales representative about your specific layout and needs.
- Factor in future data center growth, equipment additions, and other factors.

Get Started

The best starting point for an enterprise to determine if a specialty rack and/or cabinet is necessary is to speak with a sales representative who is well-versed in this area. "They'll be able to assess your current situation and determine whether a specialty cabinet might be something you'll want to consider," says Laura Viars, senior sourcing specialist at Rackmount Solutions (800/352-6631; www.rackmountsolutions.net).

Because there are numerous factors involved in determining what equipment will work best for any particular application, she says, "receiving some professional advice will certainly help." She suggests having a layout of the enterprise's current setup available for the sales representative to review, which will aid in pinpointing the ideal solution. Because many specialty cabinets are built to order, she says, "you'll want to make sure that any measurements that have been taken are accurate and that you've provided your sales representative with any and all information that might be relevant to the project."

BUYING TIPS:

Data Center Cleaning Services

A CLEAN DATA CENTER IS CRUCIAL to the performance of your physical infrastructure and the productivity of your workforce, but you can't rely solely on your janitorial staff to get the job done. Here's what to look for when hiring a data center cleaning service.

✔ Check A Service Provider's Experience & Reputation

It's important that you don't rush into choosing a data center cleaning service, because there are multiple factors to consider that may make one firm fit your needs better than another. Not every data center is created equal, and many data centers have unique cleaning needs that not all cleaning services can address.

You should research what cleaning firms offer and also look at their reputation and guarantees. You must make sure the provider has years of training in cleaning data center environments, including floors, ceilings, cases, internal components, and much more. In addition, cleaning companies should follow ISO 14644 standards, have experience cleaning ISO class 8 environments, and know how to address airborne contamination and particulate migration.

To help narrow your list of choices and assist you in making an informed decision, also find out exactly what services a cleaning firm offers and what kind of quality you can expect. The cleaning service should also be able to provide a detailed list of what it cleans and how thorough it will be.

✔ Understand Your Costs

Cost for cleaning varies depending on what a provider offers as well as its reputation. But don't let price fool you. A lot of factors go into the overall price of a cleaning service, and you should make sure you get exactly what you're paying for.

Be sure to look at what is being cleaned for the price you pay and the level of cleaning being performed. There may be specific situations, such as after construction or in the wake of a disaster, where you will need more in-depth cleaning services than on an annual floor cleaning. One type of cleaning may take more time than another, which could affect the overall pricing of the service, as well.

✔ Know What To Clean

Some parts of your data center will need to be cleaned annually, while others will require quarterly or biannual cleanings. But it's a fairly safe bet that, at some point, everything in your data center will need to be cleaned. Create a cleaning schedule for the building itself as well as the equipment and stick to the plan.

Make sure your cleaning schedule covers all access floors and floor panels, walls, ceilings, light fixtures, server racks, UPS units, panels, and more. The best cleaning firms have practices in place that will leave no stone unturned.

✔ Set Clean Policies So Your Data Center Stays Clean

Between cleanings, institute policies that limit the access employees have to certain areas of the data center as well as what they can bring into the room itself. If you can get your employees to treat the data center as a sterile environment and decrease the amount of foreign contaminants, it will make the cleaning crew's job easier and potentially lower your costs. P

BUYERS' CHECKLIST

- ✔ Check to see if your provider is a member of the Association of Data Center Cleaning Professionals.
- ✔ Require that the cleaning service's employees be background-checked and drug-screened.
- ✔ Get a detailed scope of work.
- ✔ Periodically check the work in progress.
- ✔ Limit what types of liquids and/or chemicals are allowed in the data center.

KEY TERMS

airborne contamination
Gaseous and particulate contamination that can lead to equipment failure; it's often gauged by particulate sampling.

ISO 14644-1
An international standard for air cleanliness in cleanrooms and associated controlled environments.

particulate migration
The movement of contaminants from one sector or piece of equipment to another, often as a result of the contaminant changing form as it's crushed and spread.

plenum
An enclosed space (often beneath floors or in ceilings) used for HVAC, cabling, etc.

Buying Tips:

Fire Protection

In an instant, a data center fire can devastate a business. Beyond downtime, there's equipment damage, escalating insurance rates, and other related costs—hence the need for fire protection and suppression systems. Here's what you need to know when selecting a fire protection system for your data center.

✔ Understand The Basics

Chris Jelenewicz, P.E., engineering program manager at the Society of Fire Protection Engineers, says there are several factors to consider when installing fire protection systems, including the building's structure, occupants, first responders, and equipment. Jelenewicz says both active fire systems (sprinkler, gaseous, alarm and communications, smoke management, etc.) and passive fire systems (fire doors, walls, etc.) are necessary to protect people, property, and structures. Both system types "should be designed so that they work together as one complete fire protection system."

Melanie Davy, analyst at Info-Tech Research Group, says at a minimum, a data center must have a sprinkler system, fire detection and alarm components, portable fire extinguishers, and emergency power-off abilities (according to NFPA 75). Other forms of protection, such as clean-agent suppression systems, are classified as add-ons.

✔ Decide Between Water & Non-Water Options

Fire protection is generally divided into water and non-water options. The obvious downside to using a sprinkler system is that electronic devices and water can be a bad combination, especially in situations that are started by electrical fires. Thus, most data centers opt to go with a clean agent or aerosol agent suppression system, which is designed to leave no residue and is safe for both electronics and people, unlike some chemical-based fire protection.

✔ Know Your Alert Choices

You'll need to know at what stage during a fire the detection system should trigger the suppressant to release. Effective detection is key, as the suppression system is only as good as the detection system initiating the release.

Invest in a smoke and fire detection system that can alert employees and IT staff to problems. Some models are capable of detecting the various stages of a fire, such as visible smoke, flaming fire, and intense heat, to allow you to set off alarms or activate various stages of fire protection. P

Buyers' Checklist

- ✔ Find a smoke/fire detection system that meets your needs in terms of stages of fire protection and number of physical detection locations.
- ✔ Research the various clean agent suppression options and make sure your sprinkler system can work with the clean agent suppression system.
- ✔ Invest in an emergency power off system to shut off electricity when a fire is detected.

Key Terms

aerosol agent
A type of fire suppressant system that leaves little residue and won't damage equipment. The agent does not require a sealed air-tight space as it does not pressurize the protected area when discharged.

agent storage container
The assembly or unit that stores the clean agent fire suppression liquid until it needs to be released when prompted by the suppression control panel.

Class C
Fire breakouts that involve electrical equipment where a non-conductive extinguishing agent must be used.

clean agent
A type of fire suppression system that leaves no residue.

deluge
A system where all the sprinklers connected to the water piping system are open. If the deluge valve opens due to a signal, the entire area will be sprayed with water.

early warning smoke detector
A passive detector that uses ionization and photoelectric sensors.

heat detector
A unit that sends a response when the convection of thermal energy changes the temperature of the device's heat-sensitive element.

suppression control panel
The unit that houses the interface you use to control the fire protection system.

very early warning smoke detector
A smoke detector that samples air particles via aspiration to find non-visible smoke.

Buying Tips:

KVMs

There's little doubt that KVMs offer plenty of options. Brett Femrite, Rackmount Solutions director of business development (866/207-6631; www.rackmountsolutions.net), says models include simple desktop options that control a handful of computers up to enterprise-level, IP-based KVMs with integrated matrix switching that let multiple users simultaneously access different devices.

✔ Pick A Knowledgeable Vendor

If you don't have time learn about all of the offerings, carefully consider the aptitude of the vendor partner you are working with, says Jeff Clark, president of Lindy USA (888/865-4639; www.lindy-usa.com), and be transparent about your needs and future growth plans. "A good KVM vendor can help place the right system in your hands, but in order to do that, you must take the time to include this vendor in the initial planning stages," Clark says.

✔ Consider Security

Buying a KVM with secure IP remote user access is essential to reducing manpower and negating the need for onsite operation by enabling administrators to gain BIOS-level access to servers, says Anthony Yim, general manager of Austin Hughes Solutions Inc. (510/794-2888; www.austin-hughes.com). A KVM over IP switch uses an encryption protocol that will help secure the data you send over the network.

Femrite says you need to consider automatic time out, which disconnects users after a specified period of inactivity. Permissions-based access rights are a priority feature for data centers with multiple users accessing the enterprise's devices. These rights grant specific users access to only the devices and administration levels they need.

✔ Check For Devices & Users

KVMs have a limited number of servers and devices they can directly control. Will Beene, rack specialist and technical account manager at Rack Solutions (888/903-7225; www.racksolutions.com), says you need to know how many users can be supported both locally and remotely. KVMs are offered in a variety of port densities, so you should be able to find one that perfectly fits your needs.

Yim says you can reduce KVM hardware expenditures and simplify management with a KVM that offers simultaneous multiuser access from different locations on devices connected to the same KVM switch.

✔ Factor In Compatibility

Be sure to account for compatibility, Femrite says. Determine the number of devices you want to connect, hardware devices you'll connect to it (mouse, keyboard, monitor), and the connection types (USB, PS/2) you need. Compatibility with the monitor you'll connect the KVM to (DVI or VGA) is also essential.

Mike McCurry, product manager for high-performance KVMs at Black Box (877/877-2269; www.blackbox.com), says one common mistake is purchasing different types of equipment from different manufacturers. "When performing the initial installation and configuration, 90% of these users will realize very quickly that they will have many compatibility issues on their hands," he says.

✔ Determine The Distance

Determine the maximum distance you need to connect devices to the KVM. "If further than approximately 25 feet, you should opt for a CAT5 cable vs. the standard KVM cable kit," Femrite says. If the servers are too far away for the cabling to reach, use a KVM extender.

Yim adds that CAT6 KVMs can minimize distance-related problems as a CAT6 cable with interface dongle can support up to 130 feet without signal weakness.

"KVM over IP allows the servers to be further away from the KVM switch; however, Service Access Modules (SAMs) are required," Beene says. "You have to weigh the cost vs. the benefits. In large organizations with distributed systems, KVM over IP is an easy method of administration and management."

✔ Plan For The Future

Make sure you put some thought into how you'll use the KVM now and into the future, McCurry says. "The most common mistake I see is buying a KVM switch that will solve your problems for today only," he says. "When viewing KVM switches, think about how many more computers/servers you plan on adding in the upcoming months and years. You do not want to fully populate a KVM switch right away and discover you have to get the next size up or find a completely different solution." P

Key Terms

cascading
Connecting KVM switches together in a chain by attaching one switch to the computer port of another.

converter
Converts the KVM signal from one platform to another.

matrix switching
The ability to have multiple users access multiple target devices independently.

Buyers' Checklist

Anthony Yim, general manager of Austin Hughes Solutions Inc. (510/794-2888; www.austin-hughes.com) offers this list of features to look for:

- ✔ Do you need traditional DB-15 cables or CAT6 cables with an interface dongle?
- ✔ Do you need a single local console or multiple consoles with IP remote access features?
- ✔ Will the KVM be standalone or integrated with an LCD keyboard drawer?
- ✔ Will you have a single user or concurrent users?
- ✔ Does the KVM have multiplatform connectivity so you can mix legacy hardware platforms between DVI, USB, PS2, and Sun solutions?

Buying Tips:

PDUs

PDUs have evolved into integral components of a modern power distribution infrastructure. Here's what to look for.

✔ Take Inventory Of Your Needs

Brett Femrite, director of business development at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says to do your homework prior to making a PDU purchase. "It is critical that the PDU you select match up with your power consumption needs and server/network equipment."

Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com), says you need to know how many amps are needed to support your devices. "You also need to know how much power the devices in the rack will draw, being mindful that you have the right voltage and amperage numbers."

✔ Understand The PDU Options

Femrite says there are three types of PDUs. A basic PDU lacks monitoring and remote administration capabilities. A metered PDU adds the ability to track amperage and management software to monitor the aggregate current being drawn on each PDU. Switched PDUs add local and remote control capabilities on a per-outlet level. Redundancy is important, Femrite says. A dual-circuit PDU offers fault tolerance with two power inputs.

Koty says your uptime goals influence the PDU you purchase. "Inexpensive basic rackmount PDUs may distribute power effectively, but they offer little if any understanding or control of the critical energy flow."

Alex North, director of business development at BayTech (800/523-2702; www.baytech.net), says most rack PDUs look similar. "Evaluators need to open up the hood of all PDUs they are considering and use sound engineering-based judgment to evaluate the method of power distribution the manufacturer employed in the strip."

✔ Consider Mounting & Outlets

Gina Dickson, director of infrastructure products at Black Box (877/877-2269; www.blackbox.com), says buyers often forget about mounting. "They purchase a vertical PDU and then realize after it arrives that it doesn't mount into their cabinet. One way to avoid this is to purchase PDUs and cabinets/racks from the same manufacturer."

Koty notes that horizontal PDUs take up rack space normally reserved for equipment. "If you can't reserve horizontal space in the rack for the PDU, consider a vertically mounted PDU."

Make sure PDUs have the correct outlets and outlet counts, says Andy Grav, technical sales engineer at HM Cragg (800/672-7244; www.hmcragg.com). Koty says you also need to know which types of plugs devices use so you buy PDUs with appropriate receptacles.

✔ Think Intelligently

"When thinking about PDUs, think intelligently," says Carrie Higbie, global director of data center solutions and services at Siemon (860/945-4200; www.siemon.com).

The real-time monitoring capabilities of intelligent PDUs help spot and prevent problems, she says. Alarms should identify power and environmental problems and provide the ability to remotely restart or shut down equipment. "The cost delta between basic PDUs and fully featured intelligent PDUs is negligible when compared to cabinet equipment and energy costs," she says.

Today's lights-out data centers are using switched and managed PDUs, Grav says. "Both of these options allow the end users to monitor the data center from a distance while still having control of the equipment," he says.

✔ Account For Growth

Make sure the PDU can handle your needs now and into the future. "If you don't precisely match up the PDU with your power consumption needs, taking into account anticipated growth/increases, you can wind up having a breaker tripped," Femrite says. P

Buyers' Checklist

Bob Parente, sales engineer at Server Technology (800/835-1515; www.servertech.com), recommends asking these questions when selecting a PDU:

- ✔ What is the expected maximum power needed to the rack and what voltage can be supplied to the rack?
- ✔ Does the expected max power include planned power redundancy and growth?
- ✔ Will each rack be designed for power redundancy with a standard A and B Input feed configuration? What racks are being used (mounting considerations)?
- ✔ What types of devices are being connected in the rack? Do you know the power factor for the devices within the rack? How many and what types of outlets are required?

Key Terms

basic PDUs
The least expensive PDUs; they offer simple power feeds with no extra features.

metered PDUs
Typically provide an illuminated status display measuring the load level, a handy feature when balancing loads.

smart or intelligent PDUs
Any PDU that offers Web-based management, meter power at both the PDU and individual outlet level, and real-time power monitoring.

switched PDUs
Connect to the network and offer the features of metered PDUs and remote on/off control of outlets.

Buying Tips:

Security

With so many security solutions on the market, it can be difficult to choose the right ones. Here is some advice on what every enterprise needs.

✔ Start With Network Access Control

A network access control solution will limit unnecessary access to your company's internal resources. If you can prevent outsiders from connecting to your network, then there is a much smaller chance of a security breach. Network access control systems can also be used to monitor the mobile device connections of employees working outside the company. Smartphones and tablets are becoming popular targets for hackers, so checking to make sure the external connection is safe and secure will go a long way toward preventing a potential intrusion.

✔ Move Up To Unified Threat Management

A UTM solution goes a bit beyond network access control by essentially creating a gateway through which all users and data have to pass before landing on your company's internal infrastructure. UTM combines intrusion prevention, antivirus, antispam, and many other features into one solution designed to protect your company.

✔ Don't Forget Email Security

Receiving malware-filled messages can result in the infection of one computer or the infrastructure of the entire company. And sending messages with sensitive information no matter what the reason is always a dangerous proposition. As one of the most basic measures, every company should have some form of encryption attached to its email systems. Encryption helps ensure that even if an email is intercepted, it is less likely that a hacker will be able to mine anything from it.

Along with encryption, you'll want to invest in an antivirus program to protect servers and endpoints against malicious code and viruses. Make sure the program you purchase automatically downloads and deploys signature files all the way to the endpoints.

✔ Add In Data Loss Protection

An enterprise data loss prevention (DLP) solution can "offer a lot of capability in terms of preventing the egress of data," says James Quin, lead analyst at Info-Tech Research Group. Such solutions can be expensive, so finding existing tools with DLP capabilities (up-to-date network perimeter UTMs and comprehensive endpoint anti-malware packages) can "deliver at least a moderate level of protection without the excessive cost," he says.

✔ Check For Updates & Upgrades

Making certain basic security tools are in place is half the battle. The other half is ensuring antivirus systems, hardware, and anything else tied to security are continually patched and updated.

Dan Olds, founder of Gabriel Consulting Group, says IT should take a "maniacal" approach toward patching software and firmware. "Unpatched and unmaintained systems are the biggest cause of security vulnerabilities," he says. "The biggest trouble areas are systems on the network that haven't been maintained and patched to the appropriate levels. There are a wide range of devices that tend to fly under the radar, including servers, desktops/laptops, and networking components. If something is on the network and can see the outside world, it can end up being a vulnerable point that can be exploited."

One possibility, Olds says, is using a network discovery tool that tracks down everything on the network and creates an inventory of items that need to be checked and that need the latest patches. "This is a good project for a new hire or intern—provided they're supervised," he says. P

Buyers' Checklist

- ✔ Does the solution allow you to limit access to the network and block unwanted connections?
- ✔ Can the solution provide a perimeter defense that prevents threats from landing on your servers and other internal equipment?
- ✔ Email makes it easy to infect computers with viruses and send out sensitive data to hackers, so you should invest in a strong email encryption solution.
- ✔ Will the vendor help you set up an update and upgrade plan that will let you keep your security solutions up to date without breaking your budget?

Key Terms

mail transfer agent (MTA)
A solution that catches and checks incoming email for threats before transferring it to your internal email platform.

network access control
A solution that helps you limit access to your network and lower the chance of an infiltration.

unified threat management (UTM)
Software (often installed on a managed appliance) that seeks to comprehensively block malware and network threats through features such as a firewall, antivirus, antispam, intrusion prevention, VPN, access policy enforcement, and more.

Buying Tips:

Cable & Airflow Management

Managing cables is an afterthought. That's an unfortunate reality among many data centers, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). Among other things, poor cable management leads to performance problems and issues with troubleshooting and airflow.

✔ Know What's Available

Brett Femrite, sales manager at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says well-designed patch cable storage managers, which house and cover patch cords between patch panels and devices, are popular. He says they are not only functional in helping reduce cable sprawl, but they are also bend-radius-compliant and offer cosmetic appeal. Other cable management options include horizontal and vertical wire managers (which can be mounted on the front or rear of your equipment rack or cabinet), cable ladders, a large assortment of cable trays and conduits, and various wire minders (rings) that can be mounted on any rack system.

Vertical and horizontal lacer bars are also very popular, Femrite says. "These bars can be mounted on a rack or within a cabinet and have slots through which Velcro enclosures or cable wraps are routed to hold groups of cable," he says.

Carrie Higbie, global director of data center solutions and services at Siemon (860/945-4200; www.siemon.com), says larger and wider cabinets, such as the 48-inch deep cabinets many companies are purchasing today, can allow for vertical patching or even just more room for power and communications cabling. Baffles for side discharge equipment are an important part of managing airflow.

✔ Plan For Expansion

Laura Viars, senior sourcing specialist at Rackmount Solutions, says to be sure your cable management configuration allows for future equipment additions. Do this by making certain managers (both in-rack cable managers and external trays and ladders or conduits) don't meet or exceed their fill capacities. Most management options are available in multiple sizes, she says, ensuring a fit with plenty of excess if needed.

Also seek solutions with the flexibility to add new equipment or troubleshoot an existing component. "Lean toward reusable options such as Velcro straps in lieu of cable ties and managers that allow easy access to their contents," she says. If you expect rapid and near-term growth, keep cables loosely organized during implementation by cutting down on the bundling and by using managers (D-rings vs. managers with covers) offering easier access.

✔ Avoid The Swing Arm

Server-mounted swing arms are a common solution for cable management, Higbie says, but they actually cause problems with airflow and cooling. "Swing arms route cable horizontally across the equipment, blocking exhaust fans and spaces critical to proper hot aisle/cold aisle airflow," she says.

You can eliminate server swing-arm doors by routing cords and cable directly into zero-U vertical patch panels or cable management channels, Higbie says, which dramatically reduce the airflow disruption in the horizontal cabinet space seen in traditional cabinets with swing-arm doors. "Plus, you get greater cable capacity, simpler cable management, and a much better looking installation."

✔ Consider Color & Labeling

Koty says when possible, use color coding to help visually identify and trace cables and simplify management. With data cables, use color to identify the cable's role/function or connection type. With power cables, use color to identify and organize dual-power feeds for redundant power sources. Secure labels so they're accessible but difficult to remove. Also, maintain a spreadsheet that identifies the cables and colors, where cables come from and go, and configurations. P

Buyers' Checklist

✔ **Make sure you have room.** Mark Weinegger, vice president of sales at CE Communication (866/966-1555; www.cecommunication.com), says to make sure you have enough room in your rack elevation layout to support the cable management devices purchased. Zero-U devices take up virtually no space in the rack while still allowing easy identification of the cable coming off a switch.

✔ **The basics.** Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says no matter the size of installation planned, you'll likely need basic management items such as vertical managers to bundle cable along the height of the racks/cabinets; horizontal managers to bring the cabling neatly from the drop to the equipment; and Velcro straps to bundle cables as needed.

✔ **Testing.** Pre-test all cable before installing, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). Once installed, it's more difficult to test and identify problems.

Key Terms

cable bend radius
The minimum radius a cable can acceptably bend and still function as intended.

TIA/EIA
The Telecommunications Industry Association (TIA) and Electronic Industries Alliance (EIA) provide best practice guidelines regarding cabling infrastructure.

PROCESSOR

Network With Your Peers At These IT Training & Association Meetings Across The United States

JULY

Troubleshooting & Maintaining Cisco IP Networks

July 15

New Horizons Lexington

1050 Chinoe Road, Suite 208

Lexington, Ky.

www.nhlexington.com

AITP Southwest Missouri

July 16

High Street Baptist Church

900 N. Eastgate Ave.

Springfield, Mo.

aitpspringfield.org/main.html

AFCOM Greater Tampa Bay Chapter Social Event

July 17, 12:30 to 4 p.m.

www.tampabayafcom.com

AITP California Southland

July 24

Garden Grove, Calif.

www.aitpcalsouthland.org

ISSA Inland Empire

July 30

11:30 a.m. to 1:30 p.m.

Upland, Calif.

ie.issa.org

AUGUST

AITP Washington, D.C.

Aug. 8

Alfio's La Trattorio Restaurant

4515 Willard Ave.

Chevy Chase, Md.

www.aitpdc.org

SharePoint TechCon

Aug. 11-14

Boston, Mass.

www.bigdatatechcon.com

Implementing Cisco IOS Network

Aug. 12

New Horizons Washington, D.C.

1331 F St. N.W., Suite 240

Washington, D.C.

www.dcnewhorizons.com

AITP Richmond

Aug. 13

Hilton Garden Inn at Innsbrook

4050 Cox Road

Glen Allen, Va.

www.aitprich.org

AITP Wheeling

Aug. 14

White Palace at Wheeling Park

1801 National Road

Wheeling, W.Va.

www.aitp-wheeling.org

AITP Twin City

Aug. 15, 7 p.m.

Ozark House Restaurant

704 McGregor St.

Bloomington, Ill.

www.aitp.org/members/group_content_view.asp?group=75779&id=125369

AITP Southwest Missouri

Aug. 20

High Street Baptist Church

900 N. Eastgate Ave.

Springfield, Mo.

aitpspringfield.org/main.html

Cisco CCN Certification Training Course

Aug. 21

Institute of Professional Learning

500 W. Cypress Creek Road

Ft. Lauderdale, Fla.

www.iplearning.net

ISSA Inland Empire

Aug. 27, 11:30 a.m. to 1:30 p.m.

Upland, Calif.

ie.issa.org

ISSA Baltimore

Aug. 28

Concurrent Technologies Corp.

8530 Corridor Road

Savage, Md.

www.issa-balt.org

Upcoming IT Events

SEPTEMBER

AITP Richmond
Sept. 10
Hilton Garden Inn at Innsbrook
4050 Cox Road
Glen Allen, Va.
www.aitprich.org

AITP Wheeling
Sept. 11
White Palace at Wheeling Park
1801 National Road
Wheeling, W.Va.
www.aitp-wheeling.org

AFCOM Potomac
Sept. 12
Augustine Golf Club
76 Monument Drive
Stafford, Va.
www.afcom.com

AITP Washington, D.C.
Sept. 12
Alfio's La Trattorio Restaurant
4515 Willard Ave.
Chevy Chase, Md.
www.aitpdc.org

BICSI Fall Conference
Sept. 15-19
MGM Grand Hotel
3799 Las Vegas Blvd.
Las Vegas, Nev.
www.bicsi.org

CompTIA Network Certification
Sept. 16
New Horizons Lexington
1050 Chinoe Road, Suite 208
Lexington, Ky.
www.nhlexington.com

AFCOM Greater Tampa Bay Chapter
Sept. 18, 12:30 to 4 p.m.
www.tampabayafcom.com

AITP Northeastern Wisconsin
Sept. 18
Holiday Inn Appleton
105 S. Nicolet Road
Appleton, Wis.
new.aitp.org/eventsmeeting-info

AITP Twin City
Sept. 19, 7 p.m.
Ozark House Restaurant
704 McGregor St.
Bloomington, Ill.
www.aitp.org/members/group_content_view.asp?group=75779&id=125369

Cisco CCNP Security Certification Training Course
Sept. 21
Institute of Professional Learning
500 W. Cypress Creek Road
Ft. Lauderdale, Fla.
www.iplearning.net

AITP Akron
Sept. 24
Akron, Ohio
www.akron-aitp.org

ISSA Inland Empire
Sept. 24, 6:30 to 8:30 p.m.
Upland, Calif.
ie.issa.org

AITP California Southland
Sept. 25
Garden Grove, Calif.
www.aitpcalsouthland.org

ISSA Baltimore
Sept. 25
Concurrent Technologies Corp.
8530 Corridor Road
Savage, Md.
www.issa-balt.org

Data Center World
Sept. 29-Oct. 2
Orlando World Center Marriott
Orlando, Fla.
www.datacenterworld.com

Deploying Windows Server 2008
Sept. 30
New Horizons Tysons Corner
2010 Corporate Ridge, Suite 200
McLean, Va.
www.dcnewhorizons.com

Do you have an event you'd like to see listed?
Send an email to feedback@processor.com.

Attention Data Center Professionals

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PROCESSOR
Products, News & Information Data Centers Can Trust. Since 1979

A Bold New Line Of Servers & Storage

Aberdeen LLC Ups The Ante With 21 New Stirling & AberNAS Products Aimed At Companies Of

SERVER AND STORAGE MANUFACTURER Aberdeen LLC once again stakes its claim to its position as a leading provider of the latest technologies to the IT community. Aimed at all IT users from the smallest businesses to multi-petabyte storage consumers, this newly released offering promises to deliver the most bang for the buck at every level.

IT and data center managers know you can only get the most out of servers and storage if they are ready for the upcoming technologies, which is why

two times the bandwidth of the previous models. This will enable Aberdeen

Windows NAS, Linux Server and Storage Environments
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IPMI Over a Dedicated RJ45 Port
Hardware RAID with Battery Backup
JBOD Expansion without an Additional Controller
Tool-less Rails
ABERD SERVERS AND aberdeen

PHOTO LISTINGS

The *Processor* Photo Listings section includes brief overviews of data center products. All products listed have been released recently, so use this section to get up to date with what's new on the market and to find products you need.

Manufacturers:
Do you have a new product that data center/IT managers would be interested in learning about?
Send your press release or product information to press@processor.com.

DIGI
PASSPORT CONSOLE SERVER

The Digi Passport console server is a powerful data center tool that provides secure remote access for computer systems and network equipment. It supports serial console connections, service processor connections to the leading server vendors and SMASH extensions to network-based access protocols. It is designed to work with industry leading power distribution units from Server Technology and APC. Use its advanced auditing and logging capabilities for regulatory compliance. Free up systems administrator time for planning and implementation. Use it in large data center racks, dark data centers, remote branch offices and closets.

(877) 912-3444 | www.digi.com

GREENSQL ENTERPRISE EDITION

The Enterprise Edition of GreenSQL's all-in-one Unified Database Security software combines security (monitor, alert, and blocking abilities), caching (speeds up database response times), auditing (advanced reporting and real-time alerts to help enforce compliance policies), and masking (mask personal identity information and credit card numbers) modules in one package. Features in Enterprise Edition include a database firewall engine that offers real-time protection against internal and external threats, including SQL injection attacks, before-and-after change logs, active database monitoring, virtual patching, and real-time data masking. The software-based platform can be installed on enterprise networks, cloud computing environments, and hosted platforms.

GREENSQL

+972 (3) 688-8090 | www.greenSQL.com

LOGLOGIC LX, ST & MX
LOG MANAGEMENT APPLIANCE V5.2

LogLogic is serious about meeting the security concerns of the federal government, and its LX, ST, and MX Log Management Appliances now have achieved FIPS 140-2 validation, which is required for any cryptographic product used in a U.S. government agency network. LogLogic's LX products help you investigate the present and recent past, with fast searching of indexed and non-indexed data and hundreds of template reports. ST appliances normalize, augment, and enrich your IT data to help you see your systems in new and insightful ways. MX appliances are all-in-one systems covering log management for compliance or VMware PCI compliance.

loglogic

(888) 347-3883 | www.loglogic.com

OCZ TECHNOLOGY GROUP
Z-DRIVE R4 SERIES SSD

The OCZ Z-Drive R4 Series represents a turning point in PCIe attached solid state storage by merging the best of both pure hardware and software based approaches to data management. Designed for any enterprise environment, the R4 features OCZ's Virtualized Controller Architecture (VCA) 2.0, providing performance, flexibility, and reliability, allowing data centers to rely on a PCIe SSD as their primary tier one storage solution. Additionally, the Z-Drive's level of concentrated performance enables users to design productive infrastructures while lowering costs of hard drive technology. Z-Drives integrate seamlessly with servers, creating a new flash memory tier, increasing throughput and application performance.

(408) 733-8400 | oemsales@oczenterprise.com

ITWATCHDOGS
WATCHDOG 100

ITWatchDogs introduced the WatchDog 100, a self-contained unit with on-board temperature and humidity/dew-point sensors. It has an input capacity of eight external sensors and an output of one NO/NC relay contact for triggering external devices. A variety of optional plug-and-play sensors are available for use with the WatchDog 100 including but not limited to, temperature, humidity, airflow, water and smoke detection sensors, door position, power failure, and more.

Order online and receive free shipping when you enter the promo code PWD0811.

(518) 257-1462 | www.itwatchdogs.com

AVERNA PROLIGENT
TEST & QUALITY MANAGEMENT APPLIANCE

Averna's Proligent® Appliance is a modular and flexible suite of manufacturing test and quality management solutions that can be deployed easily and securely to multiple sites.

VAULTAS
DATA CENTER HOSTING

This vendor-neutral, multicarrier, fiber-connected data center is centrally located with access to multiple 100+ Gigabit fiber-optic networks to the 511 Carrier Hotel in Minneapolis. The facility is equipped with industrial power systems with diesel

SECNAP NETWORK SECURITY
RULE18 EMAIL SECURITY AND PRIVACY SOLUTION

SECNAP has broken the smartphone security barrier with an email solution that protects the privacy of executives, entrepreneurs and others whose smartphones and mobiles

FEATURED PRODUCT

A Comprehensive Metric For IT Energy Efficiency

Power Assure PAR⁴ Helps Uncover Hidden Capacity

methodology. UL2640 gives hardware vendors an easy, universal way to publish accurate power consumption figures by providing equipment makers the PAR⁴ testing regimen as part of certification. With PAR⁴ included, Pfeiffer says, the "UL certification provides a third-party vendor, independent standard for data center managers to assess their IT equipment for energy efficiency for accurate capacity planning, as well as for ongoing hardware

engaged, power consumption could rise higher than during normal operation.

"Given Moore's Law, IT equipment performance doubles every two years," Pfeiffer says. To simplify server comparisons, a Moore's Law-based PAR⁴ rating labels comparative efficiency for each year, "past, present, and future," Pfeiffer says. This lets IT classify equipment based on "its energy efficiency relative to past and future equipment and in turn, they can then provision servers appropriately for compute needs today and plan accordingly into the future. They can also use it for an ROI on early refresh, virtualization, or hardware upgrades in general."

PAR⁴ Measurement Service

To help with PAR⁴ testing, Power Assure provides a PAR⁴ Measurement Service that gathers measurements on equipment, pinpointing exactly how much power a server uses. "This is measured data, not estimates," Pfeiffer says. "Power Assure technicians will perform all measurements at your location or our own laboratory using the Underwriters Laboratories tested PAR⁴ methodology and equipment (UL2640 standard)."

POWER ASSURE PAR⁴

(888) 225-1575
www.powerassure.com
A comprehensive metric for IT energy efficiency tested by Underwriters Laboratories.
POWER ASSURE

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PROCESSOR

Processor Solutions Directory

Here are brief snapshots of several companies offering products designed for the data center and IT industry. Listings are sorted by category, making it easy for you to find and compare companies offering the products and services you need.

You can find more detailed information on these companies and the products they offer inside this issue.

To list your company and products, call (800) 247-4880.

Physical Infrastructure

temperature@lert

Temperature@lert is a leading provider of low-cost, high-performance temperature monitoring products designed to provide early warning of temperature changes before it's too late. The company's goal is to deliver products that can eliminate your worries about system malfunctions or product damage due to temperatures. The Boston, Mass.,-based company has sold more than 10,000 products to customers in 40 countries.

Products Sold:

A full line of temperature monitoring products, including the Temperature@lert USB Edition, WiFi Edition, and Cellular Edition

(866) 524-3540 I www.temperaturealert.com

Physical Infrastructure

SIMPLEX™ ISOLATION SYSTEMS

Since 1979, Simplex Isolation Systems has been setting new design standards in modular expandable cleanroom components, isolation curtains, hardware, and new product development. Fontana, Calif.,-based Simplex's unique strip doors and mounting systems are designed for quick installation. Simplex parts and materials perform with optimum efficiency, last longer, and save you money. And with Simplex, you are always backed by industry expertise, product knowledge, and the best warranties in the market.

Products Sold:

- Cleanrooms
- Enclosures
- Strip doors
- Curtains

(877) 746-7540 I www.simplexisolationsystems.com

Physical Infrastructure

Server Technology Quality Rack Power Solutions

Server Technology is committed to the PDU market with the largest group of engineers dedicated to power distribution and other solutions within the equipment cabinet. Advancements in device power monitoring help data centers monitor and improve their efficiency, and continuous research and development is fueled by companies that look to Server Technology for their custom cabinet power solutions.

Products Sold:

A complete line of cabinet PDUs, including Per Outlet Power Sensing (POPS), Rack Mount Fail-Safe Transfer Switch, Console Port access with remote power management, Switched, Smart, Metered, Basic, and -48 VDC

(800) 835-1515 I www.servertech.com

Physical Infrastructure

CORNING

Corning Cable Systems is a leading manufacturer of fiber optic communications solutions for voice, data and video network applications worldwide. We offer the broadest range of end-to-end connectivity solutions for customers' telecommunications networks. We put companies at the forefront of network innovation, pioneering many of the global products and solutions commonly used in state-of-the-art cabling systems.

Products Sold:

- Cabling

(607) 974-9000 I www.corning.com

Physical Infrastructure

hergo® TECHNICAL WORKSPACE SOLUTIONS

Based in New York City, Hergo Ergonomic Support Systems is an independent designer and manufacturer of enclosure cabinet solutions, technical computer furniture, and modular racking systems. The company's products are designed to promote organization in the workspace and to increase the productivity of computers, peripherals, and communications equipment. Hergo is known for its high-quality products and superior customer service.

Products Sold:

- Racks
- Enclosures/cabinets
- Motorized workstations
- Flat-panel arms
- Computer desks
- Cable management
- Power management

(888) 222-7270 | www.hergo.com

Physical Infrastructure

Rack Solutions®

RackSolutions has been serving the data center market for more than 10 years. All of our products are designed, engineered, built, and shipped under our own roof. We have product solutions available for every major OEM, but if one of our existing products doesn't fit your needs, our top-notch mechanical and electrical engineers can create the item you need from scratch, solving even the toughest installation design challenges. Best of all, we typically don't charge up-front fees for design services.

Products Sold:

Computer server racks, cabinets, shelves, and mounting products.

(888) 903-7225 I www.racksolutions.com

Physical Infrastructure

GEIST

Geist is a leading data center provider for power strips, monitoring equipment, cabinet containment & in-rack cooling, and DCiM systems. Geist's power strips are tailored to meet each client's needs and provide unbeatable performance in the data center. Our industry leading monitoring and cooling solutions increase data center efficiencies and make going green easier than ever before.

Products Sold:

- Power
- Cool
- Monitor
- Manage

(800) 432-3219 I www.geistglobal.com

Physical Infrastructure

PDUs direct

PDUsDirect.com is a Master Distributor of select Server Technology PDUs for server and networked environments. PDUs Direct's basic, metered, and switched Rack PDUs provide local and remote power management, power monitoring, and environmental monitoring. We pride ourselves in offering industrial-grade quality products at the lowest prices, with the fastest shipping (most orders shipped within 24 hours) and simplest purchase process. We are the Power Behind the Business.

Products Sold:

A complete line of metered and basic PDUs, and 20A switched PDUs.

(888) 751-7387 I pdusdirect.com

Physical Infrastructure

CE COMM DATA CENTER PRODUCTS & SERVICES

C.E. Communication Services (CE COMM) distributes, markets, designs, and manufactures Data Center products, specializing in Network Infrastructure, Cable and Wire Management, and Fiber and Copper Cabling.

Products Sold:

- Patented Cable Management Systems for CISCO Catalyst and all 1U Switches
- Standard & Custom Data Center Cable Assemblies: Copper CAT5E, CAT6 & 6A
- High Density Optical Fiber Assemblies
- Fiber Connectivity, Fiber Test - Inspection and Media Conversion Equipment

(866) 966-1555 I www.cecommunication.com

Physical Infrastructure

SIEMON™

Headquartered in Connecticut, Siemon has been around since 1903 as a provider of high-quality cabling solutions designed to improve network connections, performance, and efficiency. The company manufactures end-to-end copper and fiber cabling systems, cabinets, racks and cable management solutions for data centers, and more. Siemon also has an R&D arm, Siemon Labs, which focuses heavily on innovation and shows the company's long-term commitment to its customers.

Products Sold:

- Cable management solutions
- Data center cabinets and racks
- End-to-end copper and fiber cabling
- High-speed interconnects
- Intelligent infrastructure management

(860) 945-4200 | www.siemon.com

Physical Infrastructure

Raritan® Know more. Manage smarter.™

Founded in 1985, Raritan has become a leading provider of power and energy management, DCIM and KVM solutions. Our products are in use at more than 50,000 locations worldwide, including eBay, Cisco, Intel, NASA, and the United States Post Office, giving IT departments the tools they need to increase power management efficiency, better manage data center changes, improve data center productivity and enhance branch office operations.

Products Sold:

- Intelligent Rack Power Distribution Units
- Energy Management Software
- Data Center Infrastructure Management
- KVM and Remote Access Management

(732) 764-8886 I www.raritan.com

Physical Infrastructure

HM CRAGG
Quality People. Quality Power.

As an integrator and master distributor providing quality power solutions, HM Cragg has built a reputation as the company that delivers innovation to aid and satisfy its customers. HM Cragg was founded in 1968 and is 100% employee-owned, focusing on quality people and exceptional products.

Products Sold:

- AC and DC power solutions (UPSes, power distribution)
- Control and monitoring (environmental and power)
- Connectors and cables (cord sets, ePDU cables)
- Cooling (air flow management, portable cooling)
- Racks and enclosures (standard racks, battery racks)
- Safety equipment (spill containment, safety signs)

(800) 672-7244 I www.hmcragg.com

Physical Infrastructure

RACKMOUNT SOLUTIONS

Rackmount Solutions' mission is to listen to the IT engineer's specific needs and deliver superb-quality, high-performance products through continuous product innovation and operational excellence. We pride ourselves in providing quality customer service, products that fit your IT requirements, and solid value for your money.

Products Sold:

- Wallmount and server racks and cabinets, including sound proof, air conditioned, and large cable bundle
- Desktop/tabletop portable racks
- Shockmount shipping cases
- Bulk cable

(866) 207-6631 I www.rackmountsolutions.net

Physical Infrastructure

spot coolers
Portable Air Conditioning with Confidence

Since 1985, Spot Coolers has specialized in portable cooling and heating units for use in data centers, commercial office buildings, hospitals, schools, factories, and warehouses. As a United Technologies Company, Spot Coolers takes Responsibility for Ethics, Safety, Security and Protecting the Environment. With more than 5,000 portable cooling and heating units at our 38 locations nationwide, you can be sure that our delivery and installation staff are reliable and dependable: people you can trust!

Rentals & Sales of:

- Air-cooled and water-cooled air conditioning units
- Heat pumps
- Ceiling-mounted cooling units
- Trailer-mounted cooling units

800.367.8675 I www.spot-coolers.com

Physical Infrastructure

Atlas Sales & Rentals, Inc.
THE PORTABLE COOLING & HEATING SPECIALISTS

Atlas has specialized in portable air conditioning since 1979 and leads the industry in server room and data center portable cooling. We offer "24/7" response from company-owned, full-service offices around the country, each stocked with a wide inventory of equipment for primary, supplemental, or emergency cooling. All portable items are available for sale or rental. Atlas is a Preferred MovinCool® Distributor and a GSA Certified MAS Contractor.

Products Sold:

- 1-5 ton portable air conditioners, air and water-cooled
- 12-ton portable coolers designed to roll through a standard doorway
- Ceiling-mount air conditioners – full line of MovinCool® packaged a/c units

(800) 972-6600 I www.AtlasSales.com

Physical Infrastructure

BayTech®

BayTech was founded in 1976 and, since the 1990s, has developed unique products for remote power management. The company uses printed circuit board instead of wires for a better, more resilient connection between the data center equipment and the receptacle. BayTech provides an extensive Web site with brochure downloads, warranty information, and reseller support and also offers evaluation units for data centers.

Products Sold:

- Power control, distribution, management, and metering
- Power transfer switches
- Console management and remote site management

(800) 523-2702 I www.baytech.net

Physical Infrastructure

LINDY®
CONNECTION PERFECTION

LINDY USA specializes in cables, adapters, electronics and accessories for computer, networking and audio video applications. Since 1932 Lindy has supplied high quality interconnects to customers in commercial, telecom and residential markets. What sets us apart is our complete dedication to innovation, performance and reliability. Our cabling products are truly outstanding.

Products Sold:

• Networking Products • Audio / Video • KVM • Sharing, Converting, Extending • USB and FireWire • Input Devices • Add-On Cards • Hardware and Security • Power • Cabless • Adapters and much more!

(888)-865-4639 | www.lindy-usa.com/

Physical Infrastructure

PDU Cables™
Innovator in data center efficiency

PDU Cables is the leading supplier of power distribution cables assemblies to data centers in North America. PDU Cables has been serving this industry since 1981 and is the first independent cable assembly company to introduce colored conduit into the power distribution cable market, the first to get UL 478 listing, and the first to introduce the Power Cable and Equipment Configurator software tool. The company is centrally located in Minneapolis, Minn., allowing it to offer 24-hour turnaround and shipping time of just one or two days to almost any United States destination.

Products Sold:

A range of power cables, cable seals, and power cord assemblies.

(866) 631-4238 I www.pducables.com

Physical Infrastructure

AUSTIN HUGHES®

Founded in 1995, Austin Hughes Electronics Ltd is a design and manufacturing group that offers a broad range of solutions based around 19 inch rack mount technology. With a wealth of experience Austin Hughes design and development teams are focused to rapidly transform customer requirements and market trends into saleable solutions.

Products Sold:

- Infra solution Cabinet Smartcard Handels
- InfraPower Cabinet Intelligent PDUs
- CyberView Rackmount KVM & LCD Console Drawer
- Environmental Sensors

(510) 794-2888 I www.Austin-Hughes.com

Physical Infrastructure

AMERICOOL
AIR CONDITIONING

AmeriCool, Inc. is the official sales, marketing, and distribution company for Weltem Air Conditioning products in North America. Our AmeriCool portable air conditioners are built to the highest standards in the industry and offer unbeatable performance, reliability and value. With products ranging from 1 to 5 tons we offer air conditioning solutions to companies small and large. Due to the wide operating range of our product, 24/7 cooling capability and rugged design, our product is a great solution for mission critical needs and harsh industrial applications.

Products Sold:

- Portable Air Conditioning Units

(800) 680-0725 I www.americoolinc.com

Physical Infrastructure

DATA AIRE INC.

Data Aire, Inc. has been designing and manufacturing precision cooling equipment for more than 40 years. We established some of today's industry standards, such as scroll compressors, steam generator humidifiers and microprocessor controllers. Our equipment can be found in any size organization or data center, from a closet to a Fortune 500 financial data center or government high security operation center. With our experience and expertise we can, and are willing, to design and build equipment to meet our customer's needs. With the shortest delivery times in the industry Data Aire can meet your requirements.

Products Available:

- Floor Mounted Units – CRAC or CRAH
- Ceiling Mounted Units
- Rack and Row Solutions
- Specialty Units
- Heat Exchangers
- System Controls

(800) 347-2473 | www.dataaire.com

Physical Infrastructure

SENSAPHONE®
REMOTE MONITORING SOLUTIONS

Sensaphone has been designing and manufacturing remote monitoring systems for more than 25 years and has more than 300,000 of its products in use. Sensaphone's product lineup offers a full range of devices with a broad number of features and applications designed to monitor your entire infrastructure and alert you to changes. All product engineering functions, including hardware and software design and circuit board layout and assembly, are performed at the Sensaphone facility in Aston, Penn.

Products Sold:

Remote monitoring solutions that provide email and voice alarm notification for problems related to temperature, humidity, water detection, power failure, and more.

(877) 373-2700 I www.sensaphone.com

Physical Infrastructure

AVTECH

AVTECH Software, founded in 1988, is focused on making the monitoring and management of systems, servers, networks, and data center environments easier. AVTECH provides powerful, easy-to-use software and hardware that saves organizations time and money while improving operational efficiency and preparedness. AVTECH products use advanced alerting technologies to communicate critical status information and can perform automatic corrective actions.

Products Sold:

A full range of products that monitor the IT and facilities environment, including temperature, humidity, power, flood, room entry, and UPS

(888) 220-6700 I www.AVTECH.com

Networking & VPN

METRIC SYSTEMS CORPORATION

Metric Systems Corporation® designs and manufactures broadband wireless networking equipment, and end-to-end solutions for government and industry. We've been in the business of manufacturing and integrating reliable industrial-grade wireless networking systems for over 25 years. Our networks are deployed around the world protecting and supporting people and machines. Our specialty is working with your unique requirements and existing infrastructure to provide a networking solution that fits your requirements, schedule, and budget.

Products Sold:

Rhino Box® Environmentally Controlled Equipment Shelters and SAFARI™ Wireless Controllers and Radio Systems.

(800) 549-7421 I www.metricsystems.com

Networking & VPN

Interface Masters TECHNOLOGIES
Innovative Network Solutions

Interface Masters Technologies is a leading vendor in network monitoring and high-speed networking. Based in the heart of the Silicon Valley, Interface Masters' expertise is in Gigabit, 10 Gigabit, and 40 Gigabit Ethernet network access and network connectivity solutions that integrate with monitoring systems, inline networking appliances, IPS, UTM, load balancing, WAN acceleration, and other mission-critical IT and security appliances.

Products Sold:

- Hardware load balancers
- Specialized 10GbE internal server adapter cards
- Bypass and failover systems

(408) 441-9341 I www.interfacemasters.com

Security

Barracuda

Barracuda Networks, Inc. offers industry-leading solutions designed to solve mainstream IT problems – efficiently and cost effectively – while maintaining a level of customer support and satisfaction second to none.

Products Sold:

- SECURITY: Advanced security for email, web, application and network threats
- STORAGE: Protect critical data while achieving regulation and litigation compliance
- APPLICATION DELIVERY: Improve application performance and employee productivity

(888) 268-4772 I barracuda.com

Servers

SUPERMICRO®

Supermicro® (NASDAQ: SMCI), the leading innovator in high-performance, high-efficiency server technology, is a premier provider of advanced server Building Block Solutions® for enterprise IT, data center, cloud computing, HPC, and embedded systems worldwide. Supermicro is committed to protecting the environment through its "We Keep IT Green®" initiative by providing customers with the most energy-efficient, environmentally-friendly solutions available on the market.

Products Sold:

- Servers
- Motherboards
- Chassis
- Network switches
- Storage solutions
- Blade servers
- GPU servers
- Embedded

(408) 503-8000 I www.supermicro.com

Servers

SERVER monkey .com

ServerMonkey stocks and delivers new and refurbished servers and networking equipment. Our blend of low prices, high quality and exceptional service offers a unique opportunity for corporate IT groups to economize without compromising.

Products Sold:

- Dell, HP, and other Servers
- Workstations
- Storage
- Processors
- Server Accessories

(713) 430-2182 I www.servermonkey.com

Servers

CHENBRO

Chenbro is a leader in enclosure solutions, selling its products primarily to system integrators and OEM and channel partners. The company's extensive research and development efforts help it to keep its competitive edge and maintain market leadership, with special focus on thermal, EMI, and acoustic solutions. Taiwan-based Chenbro has offices in the United States, UK, The Netherlands, and China.

Products Sold:

- A comprehensive line of PC chassis, server/workstation chassis, rackmount chassis, and HDD enclosures.

(909) 947-3200 I www.chenbro.com

Clients

dtSearch®
www.dtsearch.com

The Smart Choice for Text Retrieval® since 1991, dtSearch® offers over 21 years of experience in parsing and searching data. The dtSearch product line includes enterprise and developer text search products, meeting some of the largest-capacity text retrieval needs in the world. dtSearch's website offers hundreds of developer case studies and press reviews. The company has distributors worldwide, including coverage in six continents.

Products Licensed:

Text retrieval products, including:

- Desktop with Spider
- Network with Spider
- Publish (for portable media)
- Web with Spider
- Engine for Win & .NET
- Engine for Linux

(800) IT-FINDS I www.dtsearch.com

Services

FMI Recycling

FMI Recycling has been a leader in environmental responsibility for more than 28 years. They specialize in recycling end-of-life products, electronic equipment, scrap metals, and all types of industrial equipment. They pride themselves on their tradition of excellent customer service, knowledge and expertise, logistics capabilities, and community involvement and support.

We Process and Buy:

- Computers, Hard Drives, Memory, Laptops, IC's, Chips Boards, Cellular Phone, Telephones, Cables, Accessories
- Main Frames, Printers, Drives, Telecom, Manufacturing, all types of scrap metal

(214) 747-6525 I www.fmirecycling.com I sales@fmirecycling.com

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